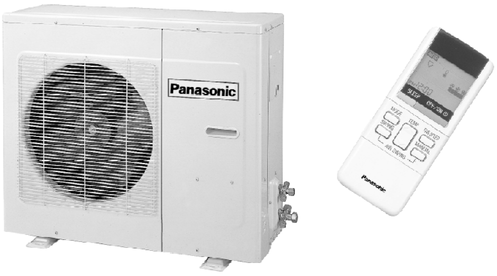
Order No: MAC011105AC3

Service Manual

Room Air Conditioner

CS-A281KR.CU-A281KR



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⚠ **WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

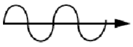
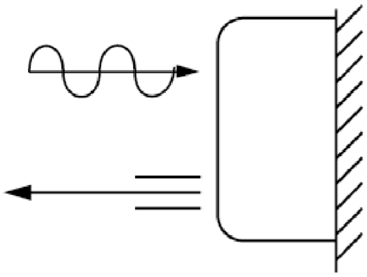
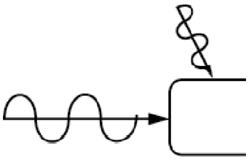
1. Features

- High Efficiency
- High Efficiency Airflow Circuit
- Compact Design
- Soft Starter Current
- Auto Restart after Power Failure

- **Long Piping up to 30m**
- **Catechin Deodorizing Air Filter**
- **Deodorizing Control during operation**
- **Cold draught Control**

2. Functions

3. Product Specifications

	Unit	CS-A281KR	CU-A281K
Cooling Capacity	kW Btu/h	8.00 - 7.92 27,300 - 27,000	
Heating Capacity	kW Btu/h	8.40 - 8.35 28,700 - 28,500	
Moisture Removal	l/h Pint/h	3.7 7.8	
Power Source	Phase V Cycle	Single 240 - 230 50	
Airflow Method	OUTLET INTAKE 	SIDE VIEW 	TOP VIEW 

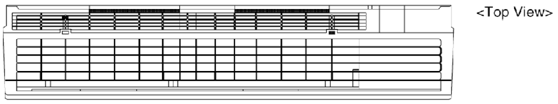
Air Volume	**Indoor Air (Lo)**	**m^3/min (cfm)**	**Cooling; 14.2 (501)** **Heating; 15.6 (551)**	**—**
	Indoor Air (Me)	**m^3/min (cfm)**	**Cooling; 15.0 (530)** **Heating; 16.4 (579)**	**—**
	Indoor Air (Hi)	**m^3/min (cfm)**	**Cooling; 16.3 (575)** **Heating; 17.7 (625)**	**—**
	Outdoor Air	**m^3/min (cfm)**	**—**	**Cooling; 59.0 (** **Heating; 59.2 (**
Noise Level		**dB (A)**	**Cooling; 48/46/44** **Heating; 48/44**	**Cooling; 63/** **Heating; 63/**
Electrical Data	**Input**	**kW**	**Cooling; 2.65 -2.62** **Heating; 2.90 - 2.88**	
	Running Current	**A**	**Cooling; 12.0 - 12.2** **Heating; 13.2 - 13.2**	
	COP	**W/W**	**Cooling; 3.02 - 3.02** **Heating; 2.90 - 2.90**	
	Starting Current	**A**	**43**	
Piping Connection Port **(Flare piping)**		**inch** **inch**	**G ; Half Union 5/8”** **L ; Half Union 1/4”**	**G ; 3-way valv** **L ; 3-way valv**
Pipe Size **(Flare piping)**		**inch** **inch**	**G (gas side); 5/8”** **L (liquid side); 1/4”**	**G (gas side);** **L (liquid side);**
Drain Hose	**Inner diameter**	**mm**	**14**	**—**
	Length	**m**	**0.73**	**—**
Power Cord Length **Number of core-wire**		**m**	**2.1** **3 (2.5 mm^2)**	**—** **—**
Dimensions	**Height**	**inch (mm)**	**14 - 9/16 (370)**	**26 - 31/32 (6**
	Width	**inch (mm)**	**48 - 1/32 (1,220)**	**34 - 21/32 (8**
	Depth	**inch (mm)**	**8 - 21/32 (220)**	**13 - 19/32 (3**
Net Weight		**lb (kg)**	**40 (18)**	**154 (70)**

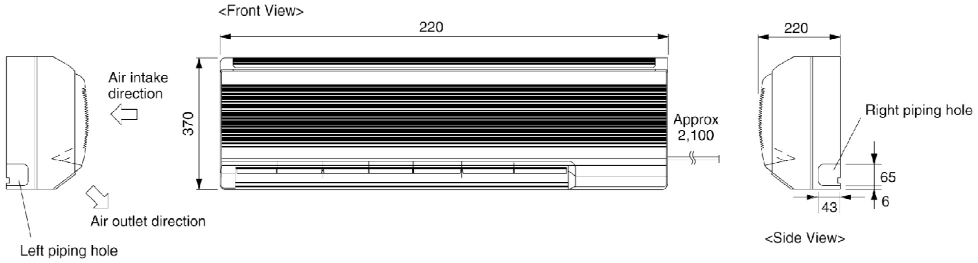
Compressor		**Type**		**—**	**Scroll typ**
	Motor	**Type**		**—**	**Induction (2-p**
	Rated	**Output**	**kW**	**—**	**—**
Air Circulation		**Type**		**Cross-flow Fan**	**Propeller F**
		Material		**AS + Glass Fiber 30%**	**AS + Glass Fib**
	Motor	**Type**		**Induction (4-poles)**	**Induction (4-p**
		Input	**W**	**—**	**—**
	Rated	**Output**	**W**	**40**	**100**
	Fan Speed	**Low**	**rpm**	**Cooling; 1,262 Heating; 1,250**	**920 - 880**
		Medium	**rpm**	**Cooling; 1,322 Heating; 1,328**	**—**
		High	**rpm**	**Cooling; 1,418 Heating; 1,420**	**1,200 - 1,17**
Heat Exchanger	**Description**			**Evaporator**	**Condense**
	Tube material			**Copper**	**Copper**
	Fin material			**Aluminium**	**Aluminiu**
	Fin Type			**Louver**	**Louver**
	Row / Stage			**(Plate fin configuration, forced draft)**	
				2 × 10	**2 × 26**
	FPI			**18**	**18**
	Size (W × H × L)		**mm**	**966.5 × 254 × 44**	**826 × 663.9**
Refrigerant Control Device				**—**	**Capillary Tu**
Refrigeration Oil			**(cm3)**	**—**	**SONTEX** **200 LT (1,24**
Refrigerant (R-22)			**g (oz)**	**—**	**1,800 (63.5**
Thermostat				**Electronic Control**	**Electronic Co**
Protection Device				**Inner Protector**	**Inner Protec**
Capillary Tube	**Length**		**mm**	**—**	**Cooling; 850, Heati**
	Flow Rate		**l/min**	**—**	**Cooling; 21.8, Heat** **2 ATM)**
	Inner Diameter		**mm**	**—**	**Cooling; 2.0, Hea**
Air Filter	**Material**			**A.B.S**	**—**
	Style			**Honeycomb**	
Compressor Capacitor			**µ F, VAC**	**—**	**50 µ F, 370**
Fan Motor Capacitor			**µ F, VAC**	**2.0 µ F, 450VAC**	**3.0 µ F, 450**

- **Specifications are subject to change without notice for further improvement.**

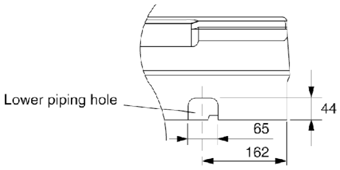
4. Dimensions

CS-A281KR.CU-A281KR

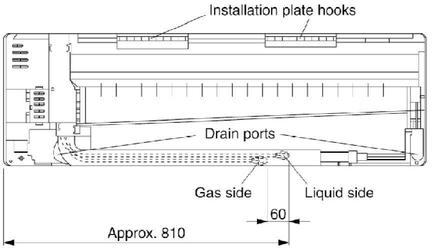




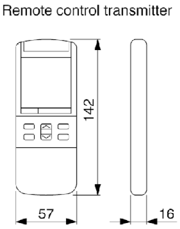
<Front View>
220
Air intake direction
370
Approx 2,100
Air outlet direction
Left piping hole
220
Right piping hole
65
6
43
<Side View>



Lower piping hole
44
65
162

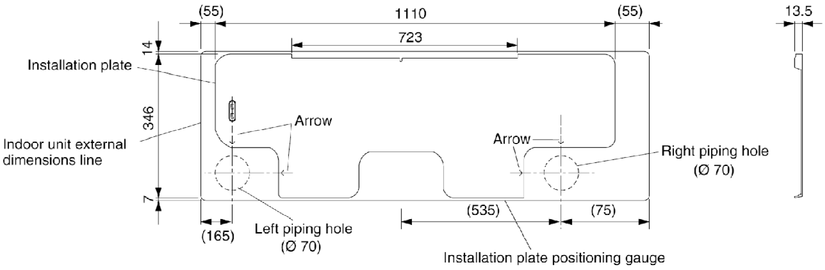


Installation plate hooks
Drain ports
Gas side
Liquid side
60
Approx. 810



Remote control transmitter
142
57
16

Relative position between the indoor unit and the installation plate <Front View>

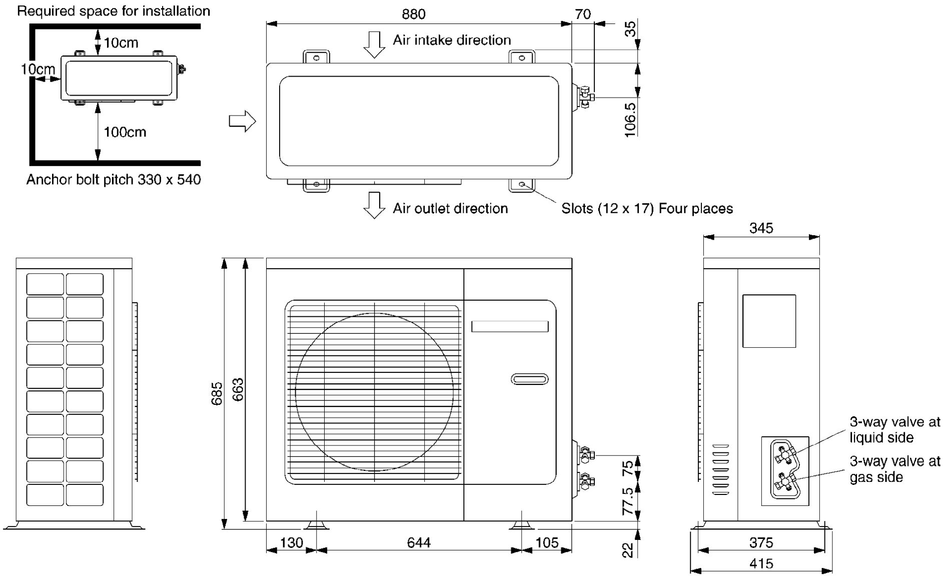


(55)
1110
(55)
13.5
723
14
Installation plate
346
Arrow
Indoor unit external dimensions line
Arrow
Right piping hole
(Ø 70)
7
(535)
(75)
(165)
Left piping hole
(Ø 70)
Installation plate positioning gauge

Unit : mm

Dimensions

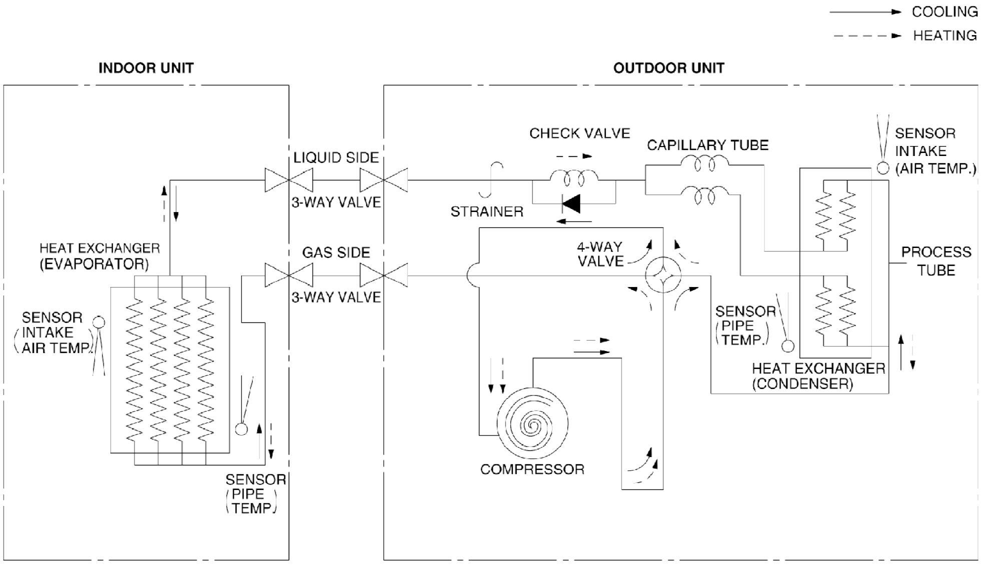
CS-A281KR.CU-A281KR


Required space for installation
10cm
10cm
100cm
Anchor bolt pitch 330 x 540
880
70
35
106.5
Air intake direction
Air outlet direction
Slots (12 x 17) Four places
345
685
663
75
77.5
22
130
644
105
375
415
3-way valve at liquid side
3-way valve at gas side

Unit : mm

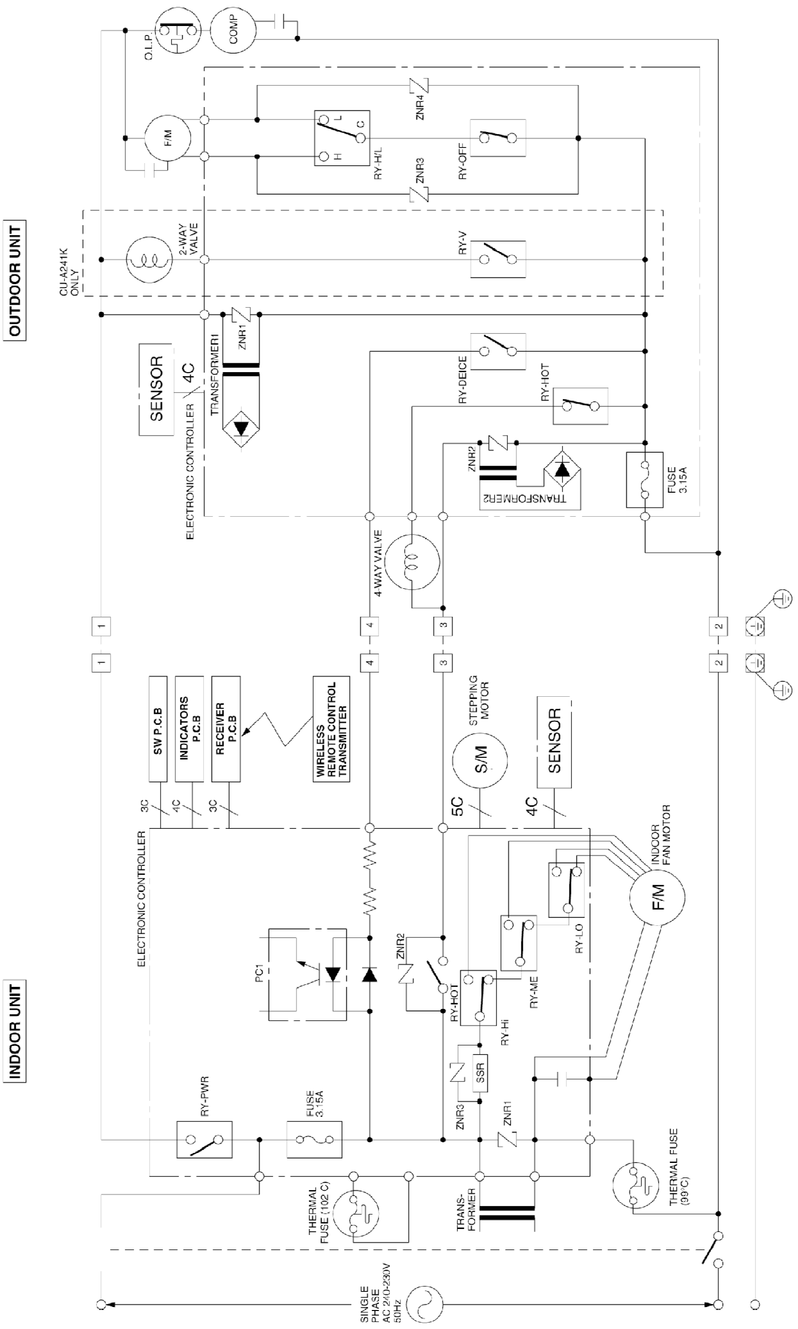
5. Refrigeration Cycle Diagram

CS-A281KR.CU-A281KR


COOLING
HEATING
INDOOR UNIT
OUTDOOR UNIT
LIQUID SIDE
3-WAY VALVE
GAS SIDE
3-WAY VALVE
HEAT EXCHANGER (EVAPORATOR)
SENSOR (INTAKE AIR TEMP.)
SENSOR (PIPE TEMP.)
CHECK VALVE
CAPILLARY TUBE
STRAINER
4-WAY VALVE
COMPRESSOR
SENSOR INTAKE (AIR TEMP.)
PROCESS TUBE
SENSOR (PIPE TEMP.)
HEAT EXCHANGER (CONDENSER)

6. Block Diagram

CS-A281KR.CU-A281KR

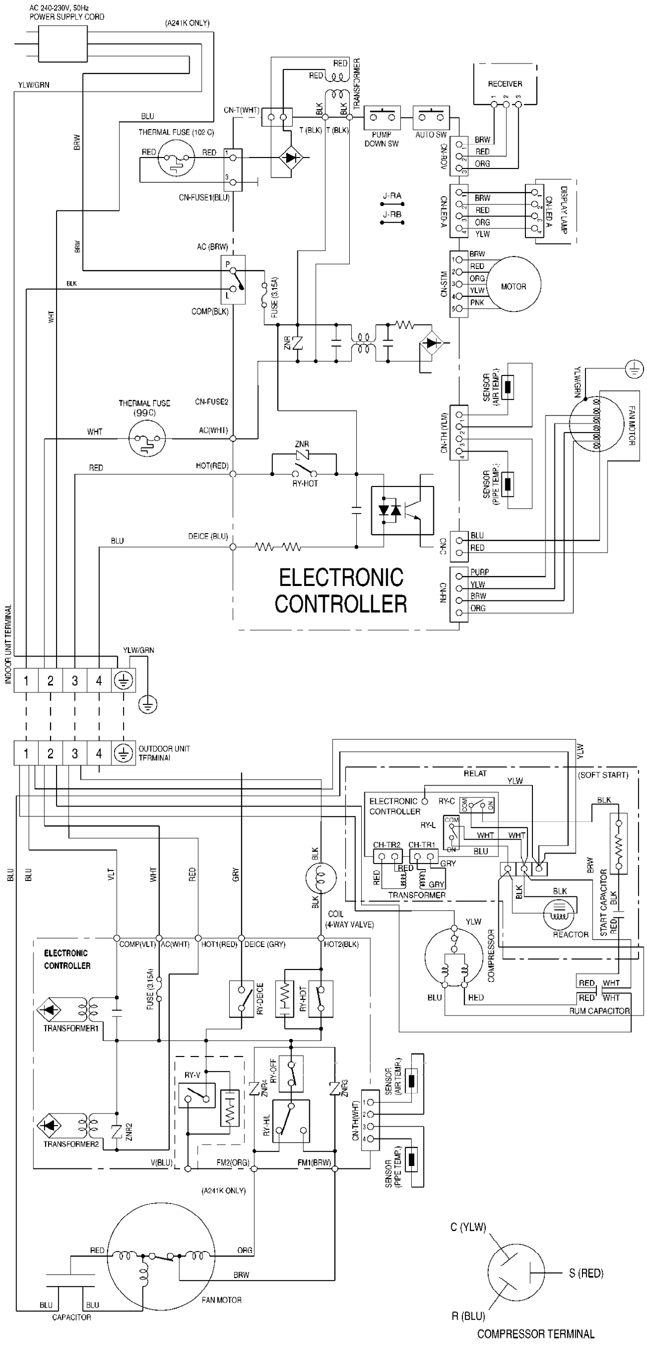

OUTDOOR UNIT
INDOOR UNIT
O.L.P
COMP
F/M
ZNR4
RY-H/L
H
L
C
ZNR3
RY-OFF
CU-A241K ONLY
2-WAY VALVE
RY-V
SENSOR
4C
TRANSFORMER1
ZNR1
ELECTRONIC CONTROLLER
RY-DEICE
RY-HOT
ZNR2
TRANSFORMER2
FUSE 3.15A
4 WAY VALVE
1
2
3
4
SW P.C.B
INDICATORS P.C.B
RECEIVER P.C.B
WIRELESS REMOTE CONTROL TRANSMITTER
STEPPING MOTOR
S/M
SENSOR
5C
4C
3C
4C
3C
ELECTRONIC CONTROLLER
PC1
ZNR2
RY-HOT
RY-ME
RY-LO
RY Hi
INDOOR FAN MOTOR
F/M
ZNR3
SSR
ZNR1
RY-PWR
FUSE 3.15A
THERMAL FUSE (102°C)
TRANS-FORMER
THERMAL FUSE (99°C)
SINGLE PHASE AC 220-230V 50Hz

※ ⬚ Indicates the electronic control unit.

※ "C" Indicates the number of core wires. (Example: 6C=6 core wires)

7. Wiring Diagram

CS-A281KR.CU-A281KR



AC 240-230V, 50Hz POWER SUPPLY CORD
(A241K ONLY)
YLW/GRN
BRW
BLU
THERMAL FUSE (102 C)
CN-T(WHT)
TRANSFORMER
T (BLK)
PUMP DOWN SW
AUTO SW
RECEIVER
CN-RCV
CN-LED A
DISPLAY LAMP
J-RA
J-RB
CN-FUSE1(BLU)
AC (BRW)
COMP(BLK)
FUSE (3.15A)
CN-STM
MOTOR
ZNR
SENSOR (AIR TEMP.)
SENSOR (PIPE TEMP.)
CN-TH (YLW)
FAN MOTOR
THERMAL FUSE (99C)
CN-FUSE2
AC(WHT)
HOT(RED)
RY-HOT
DEICE (BLU)
CN-C
CN-FM
ELECTRONIC CONTROLLER
INDOOR UNIT TERMINAL
OUTDOOR UNIT TERMINAL
RELAY
(SOFT START)
RY-C
RY-L
CN-TR2
CN-TR1
TRANSFORMER
COIL (4-WAY VALVE)
COMPRESSOR
REACTOR
START CAPACITOR
RUN CAPACITOR
COMP(VLT)
AC(WHT)
HOT1(RED)
DEICE (GRY)
HOT2(BLK)
TRANSFORMER1
TRANSFORMER2
ZNR2
RY-DEICE
RY-HOT
RY-V
RY-OFF
RY-HI
ZNR4
ZNR3
CN-TH(WHT)
V(BLU)
FM2(ORG)
FM1(BRW)
(A241K ONLY)
FAN MOTOR
CAPACITOR
C (YLW)
S (RED)
R (BLU)
COMPRESSOR TERMINAL

Remarks:

BLU : BLUE
BRW : BROWN
BLK : BLACK
WHT : WHITE
RED : RED
ORG : ORANGE
PNK : PINK
YLW : YELLOW
GRN : GREEN
GRY : GRAY
VLT : VIOLET
PURP : PURPLE

Resistance of Indoor Fan Motor Windings

CONNECTION	CWA4301370
BLUE - PURP	126.2
PURP - YLW	104.5
YLW - BRW	48.1
BRW - ORG	48.5
RED - PURP	131.0

Resistance of Outdoor Fan Motor Windings

CONNECTION	CWA4301380
BLUE - BROWN	50.81
BROWN - ORANGE	34.3
RED - BROWN	92.4

Resistance of Compressor Windings

CONNECTION	ZR34K3PFJ512
C - R	0.937 Ω
C - S	2.07 Ω

8. Operation Details

8.1. Cooling Mode Operation

Cooling in operation according to Remote Control setting.

Time Delay Safety Control (3 minutes)

- When the compressor is stopped by Power Switch, Remote Control or there is a power failure, it restarts after 3 minutes when the Power Switch, Remote Control is turned ON or the power supply is resumed.

- When the setting temperature is reached during cooling operation, the compressor stops and it will not start for 3 minutes.

7 minutes Time Saved Control

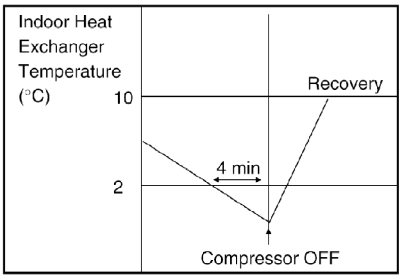
- The compressor will start automatically if it has stopped for 7 minutes even if the room temperature is below the compressor ON temperature.

Anti-Freezing Control

- If the temperature of the indoor heat exchanger falls continuously below 2°C for 4 minutes, the compressor turns off to protect the indoor heat exchanger from freezing. The fan speed setting remains the same. /

- Compressor recommences when the indoor heat exchanger temperature rises to 10°C (Recovery).

※3 minutes waiting of Time Delay Safety Control is valid for Cooling Operation.

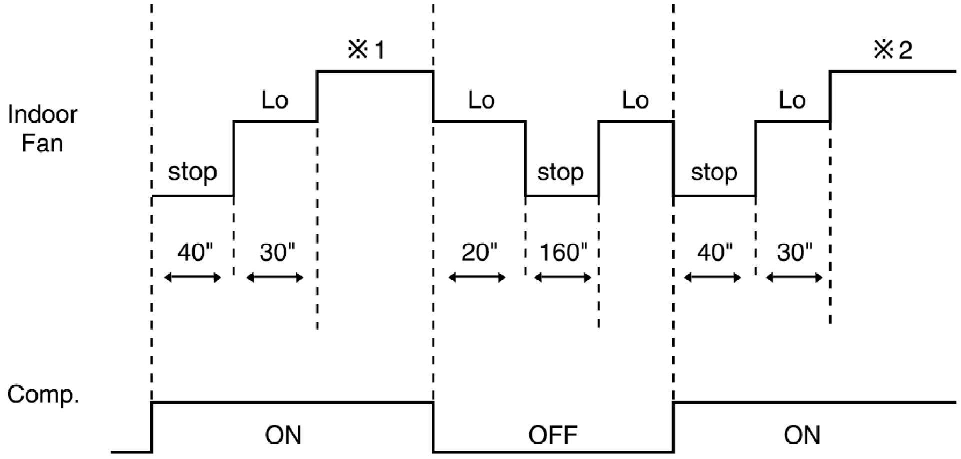


Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during cooling operation.

- Fan speed rotates in the range of Hi to Me.

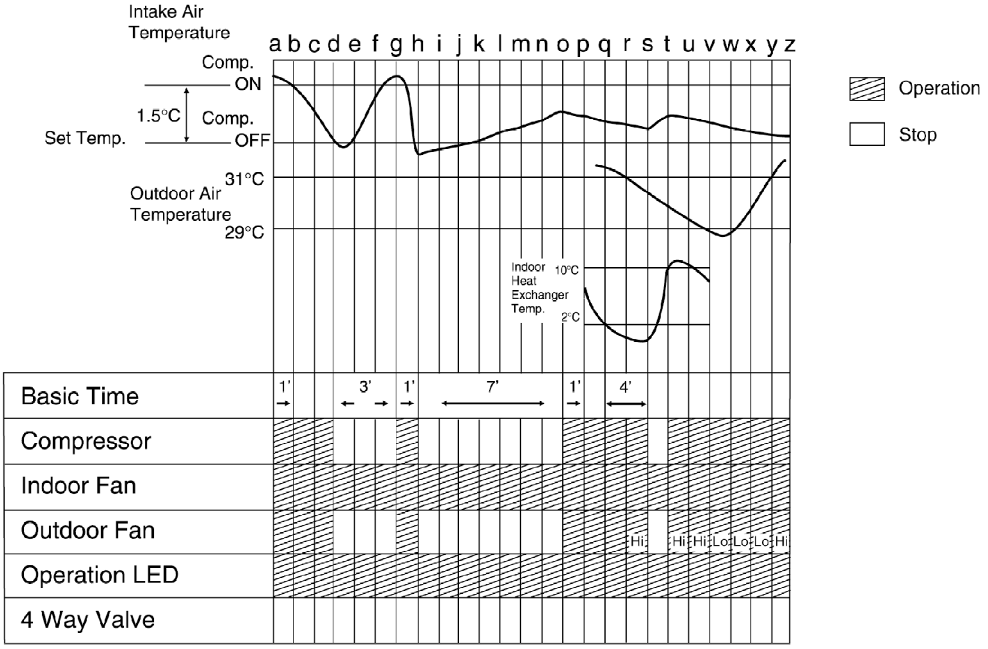
- Deodorizing Control.


※1
※2
Indoor Fan
stop
Lo
Lo
Lo
stop
stop
Lo
40"
30"
20"
160"
40"
30"
Comp.
ON
OFF
ON

※ 1 Fan Speed is Hi until the compressor stops (when the room temperature reaches setting temperature).

※ 2 Fan Speed is Me after the compressor restarts.

Cooling Operation Time Diagram


Intake Air Temperature
a b c d e f g h i j k l m n o p q r s t u v w x y z
Comp. ON
1.5°C
Comp. OFF
Set Temp.
31°C
Outdoor Air Temperature
29°C
Indoor Heat Exchanger Temp.
10°C
2°C
Operation
Stop
Basic Time
1'
3'
1'
7'
1'
4'
Compressor
Indoor Fan
Outdoor Fan
Hi
Hi
Hi
Lo
Lo
Lo
Hi
Operation LED
4 Way Valve

<Description of operation>

d - g : Time Delay Safety Control (waiting for 3 minutes)
g - h : 60 sec. Forced Operation
h - o : 7 min. Time Saved Control
q - t : Anti Freezing Control
v -y : Outdoor Fan Control

8.2. Soft Dry Mode Operation

- The unit starts cooling operation until the room temperature reaches the setting temperature set on the Remote Control, and then Soft Dry operation will start.

- During Soft Dry operation, the Indoor Fan operates with Lo speed.

- Once room temperature reaches below Soft Dry OFF temperature, Indoor Fan, Compressor and Outdoor Fan Stop for 6 minutes.

Time Delay Safety Control

- Once the compressor stops, it will not start for 3 minutes during Cooling operation.

Anti-Freezing Control

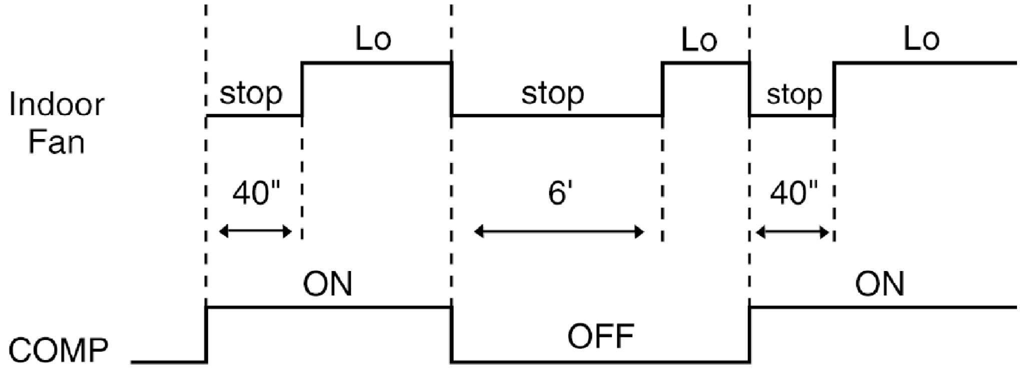
- Same as Anti-Freezing Control for Cooling Mode operation. (For

Soft Dry region, 6 minutes waiting is valid during compressor stops.)

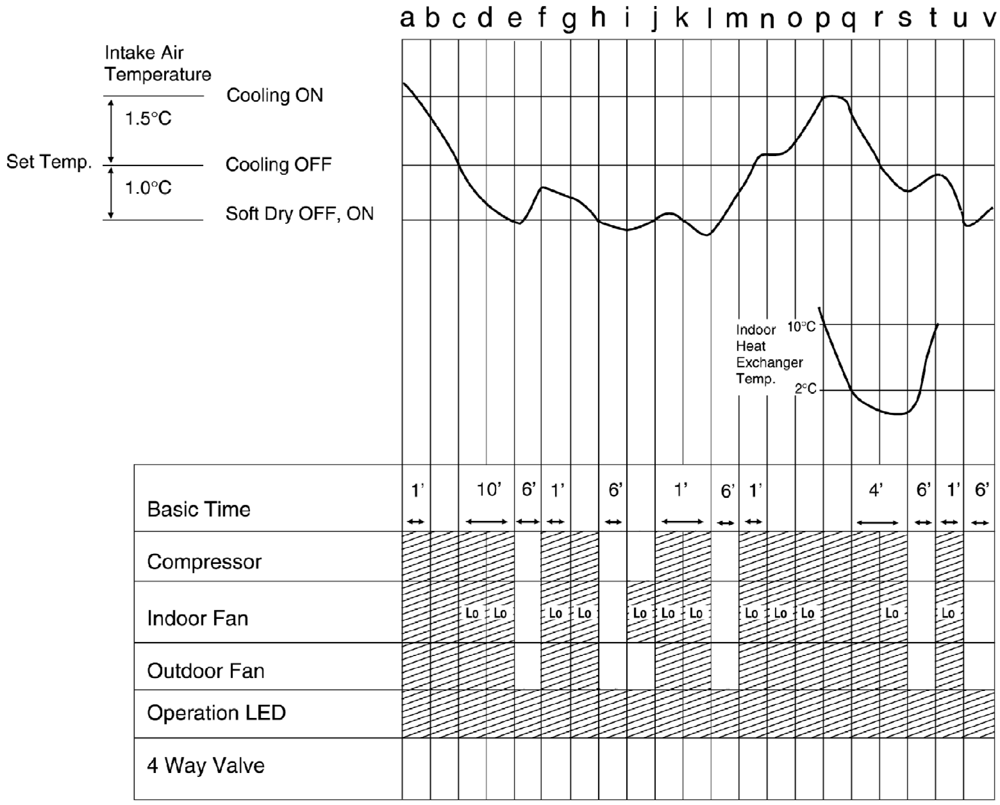
Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during Soft Dry operation.

- **Fan speed rotates at Lo speed.**
- **Deodorizing Control.**


Indoor Fan
stop
Lo
stop
Lo
stop
Lo
40"
6'
40"
ON
OFF
ON
COMP

Soft Dry Operation Time Diagram


a b c d e f g h i j k l m n o p q r s t u v
Intake Air Temperature
Cooling ON
1.5°C
Set Temp.
Cooling OFF
1.0°C
Soft Dry OFF, ON
Indoor Heat Exchanger Temp.
10°C
2°C
Basic Time
1'
10'
6'
1'
6'
1'
6'
1'
4'
6'
1'
6'
Compressor
Indoor Fan
Lo
Outdoor Fan
Operation LED
4 Way Valve

<Description of operation>

a - c, p ~ r : Cooling Operation
c - p, r ~ v : Soft Dry Operation
e - f : Soft Dry OFF
j - l : 60 sec. Forced Operation
q - t : Anti Freezing Control

▨ Operation
☐ Stop

8.3. Heating Mode Operation

- Heating in operation according to Remote Control setting.

Time Delay Safety Control

- When the compressor is stopped by Power Switch, Remote Control or there is a power failure, it restarts after 3 minutes when the Power Switch, Remote Control is turned ON or the power supply is resumed.

- When the setting temperature is reached during heating operation, the compressor stops and it will not start for 4 minutes.

30 minutes Time Saved Control

- **The compressor will start automatically if it has stopped for 30 minutes even if the room temperature is below the compressor OFF temperature.**

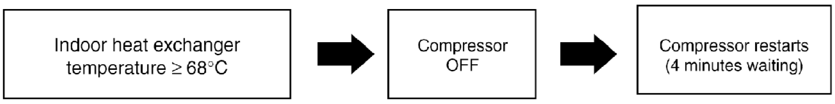
Overload Protection Control

- **If the temperature of the Outdoor Heat Exchanger less than -3°C, Outdoor Fan is ON. The Outdoor Fan stop, when Outdoor Heat Exchanger temperature is T_b or more according to Outdoor Air Temperature region as table below:**

Outdoor Air Temperature	<10°C	⩾10°C~15°C	⩾15°C~<20°C	⩾20°C~<25°C	⩾25°C	Outdoor Fan OFF
T_b	⩾5°C	⩾4°C	⩾3°C	⩾2°C	⩾1°C	

During starting of Heating mode and after deice, Outdoor Fan ON for 90 sec. (Hi).

- **If the Indoor heat exchanger becomes 68°C or more, the compressor will stop and restart automatically.
  (Time Delay Safety Control - 4 minutes waiting)**

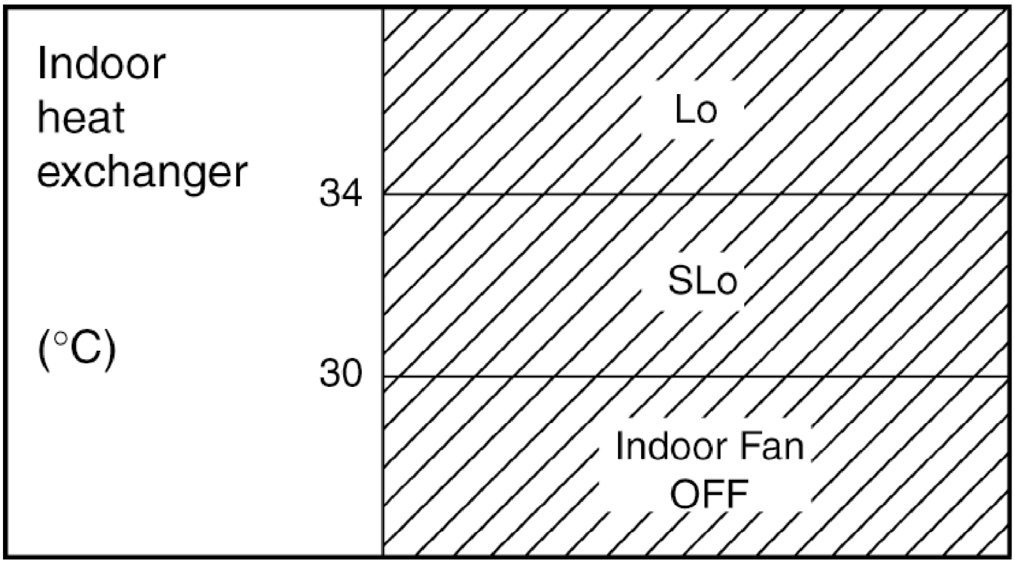

Indoor heat exchanger temperature ≥ 68°C
Compressor OFF
Compressor restarts (4 minutes waiting)

4-way Valve Control

- **4-way valve ON during Heating operation, except deicing operation.**
- **When the unit is switched to “OFF” during Heating operation, 4-way valve stay at Heating position for 5 minutes.**

Hot Start Control

When Heating operation starts, Indoor Fan will not start until the indoor heat exchanger reaches 30°C as diagram shown.

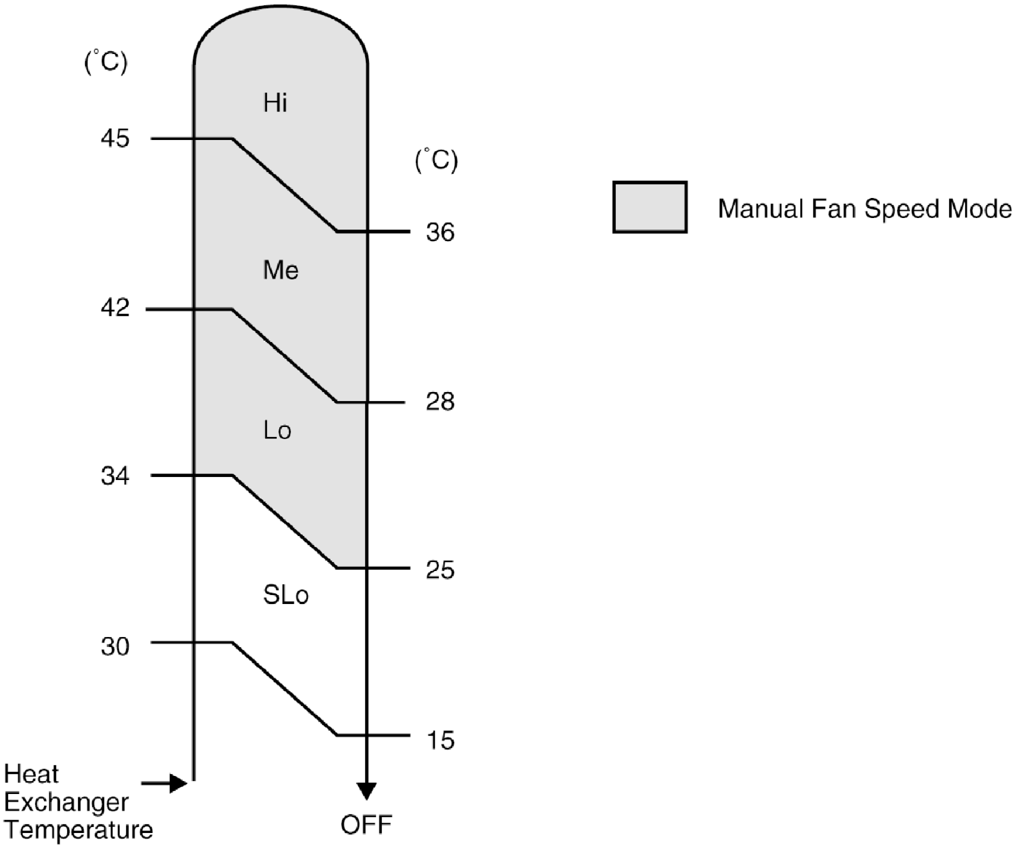

Indoor heat exchanger
(°C)
34
30
Lo
SLo
Indoor Fan OFF

Hot Start is completed when indoor heat exchanger reaches 42°C.
Maximum Hot start duration = 4 minutes. After 4 minutes, Hot start operation will be shifted to normal Heating operation.

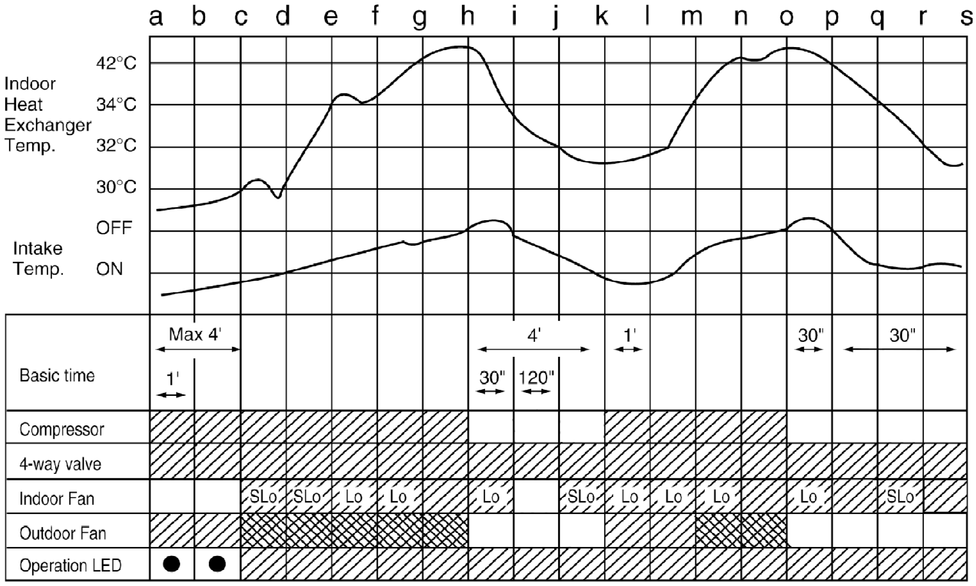
Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during heating operation.

- **Fan speed rotates in the range of Hi → SLo according to the heat exchanger temperature.**


(˚C)
Hi
45
(˚C)
36
Manual Fan Speed Mode
Me
42
28
Lo
34
25
SLo
30
15
Heat
Exchanger
Temperature
OFF

Heating Operating Time Diagram


a b c d e f g h i j k l m n o p q r s
Indoor Heat Exchanger Temp.
42°C
34°C
32°C
30°C
Intake Temp.
OFF
ON
Basic time
Max 4'
1'
4'
30"
120"
1'
30"
30"
Compressor
4-way valve
Indoor Fan
SLo
SLo
Lo
Lo
Lo
SLo
Lo
Lo
Lo
Lo
SLo
Outdoor Fan
Operation LED

<Description of operation>

a - c : Hot start (Indoor fan = OFF)
c - d : Hot start (Indoor fan = SLo)
h - k, o -s : Indoor fan control (controlled during thermostat OFF)

● : Blinking
▨ Operation
□ Stop
▩ Operation or Stop

Deicing Control

Deice starts to prevent frosting at outdoor heat exchanger.

- **Normal Deicing**

  Deice operations detection commences in Heating operation starts or 60 minutes after previous deice operation. If the outdoor piping temperature drops to -4°C for 50 sec. continuously during compressor is in operation, deice will start.

  (There is no detection during Outdoor Fan stops.)

- **Overload Deicing**

  During heating operation, if the outdoor Fan OFF duration (due to overload control) is accumulated up to 60 minutes and after compressor starts for 1 minute, deicing starts.

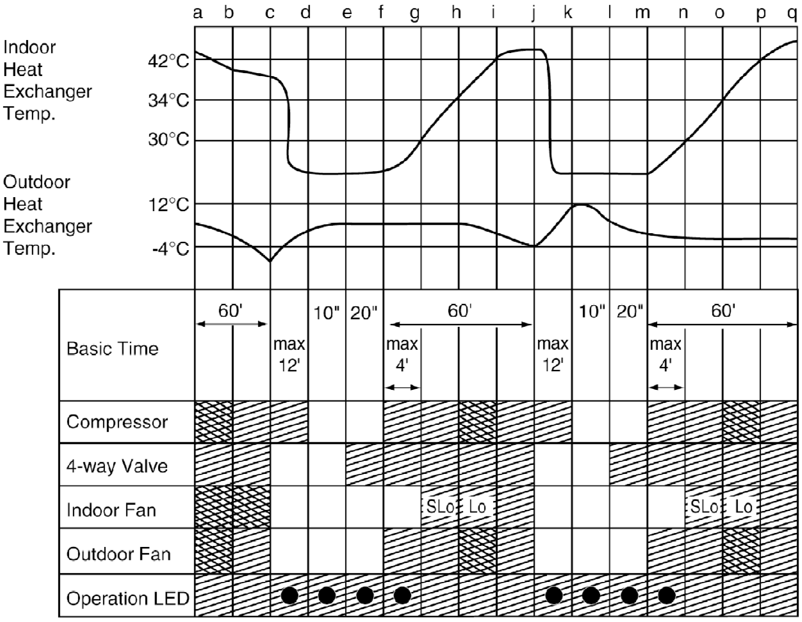
- **Deicing ends when**

  (a) 12 minutes after deicing operation starts;

  (b) The outdoor piping temperature rises to about 12°C.

- **After deicing operation, compressor stops for 30 seconds and 4-way valve stays at cooling position for 10 seconds.**

a) Normal Deicing Time Diagram


a b c d e f g h i j k l m n o p q
Indoor Heat Exchanger Temp.
42°C
34°C
30°C
Outdoor Heat Exchanger Temp.
12°C
-4°C
Basic Time
60'
max 12'
10"
20"
max 4'
60'
max 12'
10"
20"
max 4'
60'
Compressor
4-way Valve
Indoor Fan
SLo
Lo
SLo
Lo
Outdoor Fan
Operation LED

● : Blinking

▨ Operation

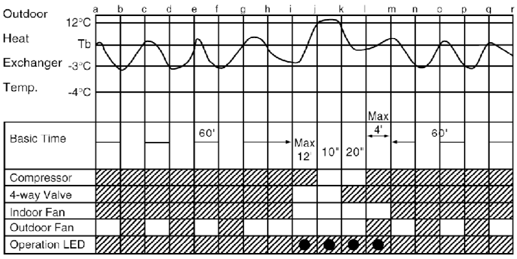
☐ Stop

▩ Operation or Stop

<Description of operation>

a - c : Deicing operation judging condition estabilished.
c - f : Deicing operation.
f - g : Hot start (add 4 minute delay timing)

b) Overload Deicing Time Diagram


a b c d e f g h i j k l m n o p q r
Outdoor Heat Exchanger Temp.
12°C
Tb
-3°C
-4°C
Basic Time
60'
Max 12
10"
20"
Max 4'
60'
Compressor
4-way Valve
Indoor Fan
Outdoor Fan
Operation LED

<Description of operation>

a - i : Overload control.
i - l : Overload deicing.
l - m : Hot start (add 4 minutes delay timing).
m - r : Overload control.

● : Blinking

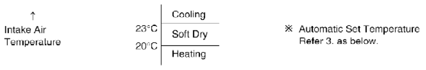
▨ Operation

☐ Stop

8.4. Automatic Mode Operation

1. When the Automatic Mode Operation is selected, the indoor fan operates at SLo fan speed for 20 seconds to sense intake air temperature and determine the 1st operation mode.

Standard for Determining Operation Mode 1st Judgement



※ Automatic Set Temperature Refer 3. as below.

2. Operation mode will be determine again after 1 hour of operation, if the room temperature reaches to set temperature and compressor off time is over 7 minutes 30 seconds continuously.

※Indoor intake air is less than 16°C, Heating mode will immediate operate. (only in the first time judgement)

※The present operation mode will be continued, if the room

temperature does not reach to set temperature (Compressor keeps running) eventhough after 1 hour from automatic operation mode started.

For 2nd judgement onwards, indoor fan will operate for 20 seconds to sense the intake air temperature for determining operation mode.

Standard for Determining Operation Mode 2nd Judgement onwards

Present Mode	Judgement	Next Mode		
		Cooling	Soft Dry	Hea
Cooling	23°C Cooling Heating	O (Judgement: 23°C & Above)	Not Applicable	(Judge Below
Soft Dry	20°C Soft Dry Heating	Not Applicable	O (Judgement: 20°C & Above)	(Judge Below
Heating	Cooling 25°C Heating	O (Judgement: 25°C & Above)	Not Applicable	(Judge Below

3. Automatic Set Temperature

For each operation, set temperature will automatically set as shown below.

However it can be selected 2°C higher or 2°C lower from standard set temperature by pressing the “Room Temperature Setting button”.

Operation Mode	Higher	Standard	Lower
	(+2°C)	(±0°C)	(-2°C)
Cooling	27°C	25°C	23°C
Soft Dry	24°C	22°C	20°C
Heating	23°C	21°C	19°C

8.5. Sleep Mode Auto Operation

Cooling or Soft Dry Operation

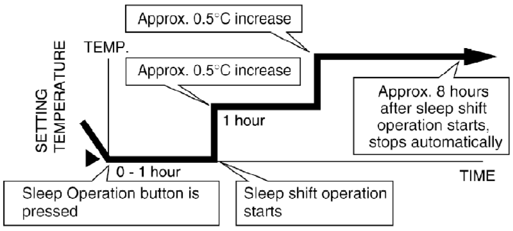
When you press the SLEEP Mode, the following movement will start to avoid overcooling.

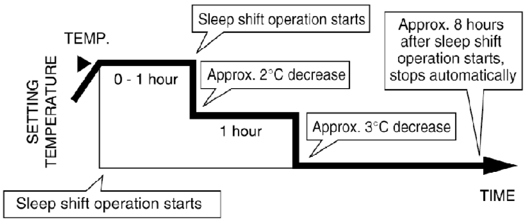
- **The fan speed refer to Indoor Fan Motor Control.**
- **The setting temperature will be risen by 0.5°C at the start of operation and by 0.5°C one hour later.**
- **The operation will stop after 8 hours.**
- **When using together with the Timer, the ON-Timer has priority.**

Heating Operation

When you press the SLEEP Mode, the following movement will start to avoid overheating.

- **The fan speed refer to Indoor Fan Motor Control.**
- **The setting temperature will be risen by 2°C at the start of operation and by 3°C one hour later.**
- **The operation will stop after 8 hours.**
- **When using together with the Timer, the ON-Timer has priority.**


Approx. 0.5°C increase
TEMP.
SETTING TEMPERATURE
Approx. 0.5°C increase
1 hour
Approx. 8 hours after sleep shift operation starts, stops automatically
0 - 1 hour
TIME
Sleep Operation button is pressed
Sleep shift operation starts


Sleep shift operation starts
Approx. 8 hours after sleep shift operation starts, stops automatically
TEMP.
SETTING TEMPERATURE
0 - 1 hour
Approx. 2°C decrease
1 hour
Approx. 3°C decrease
Sleep shift operation starts
TIME

8.6. Auto Restart Control

- If there is a power failure, operation will be automatically restarted when the power is resumed.

It will start with previous operation mode and airflow direction. (Time Delay Safety Control is valid)

- Auto Restart Control is not available when Timer or Sleep Mode is set.

- This control can be omitted by cutting the jumper wire J2. (Refer Circuit Diagram)

8.7. Indoor Fan Speed Control

- Auto Fan Speed Control

When set to Auto Fan Speed, the fan speed is adjusted between maximum and minimum setting as shown in the table.

- Manual Fan Speed Control

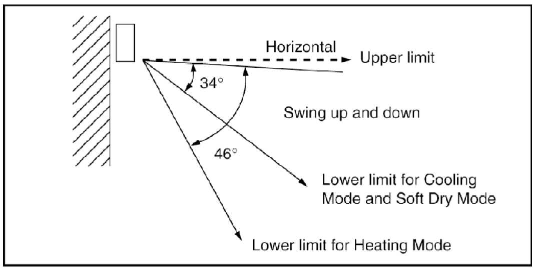
Basic fan speed adjustment (3 settings, from Lo to Hi) can be carried out by using the Fan Speed selection button.

Fan Speed		High Speed ←→ Low Speed							
Cooling	Manual	O	O	O					O
	Auto	O	O	O					
	Sleep			O					
Soft Dry	Manual, Auto			O					O
	Sleep			O					
Heating	Manual	O	O	O					
	Auto	O	O	O	O	O			O
	Sleep			O	O	O			
		Hi	Me	Lo	SLo	SSLo			STOP

8.8. Airflow Direction Control

Airflow Direction Auto-Control

- When set a Airflow Direction Auto-Control with remote control, the louver swings up and down as shown in the diagram.
- The louver does not swing when the Indoor Fan stops during operation.
- When stopped with remote control, the discharge vent is closed with the louver.


Horizontal
Upper limit
34°
Swing up and down
46°
Lower limit for Cooling Mode and Soft Dry Mode
Lower limit for Heating Mode

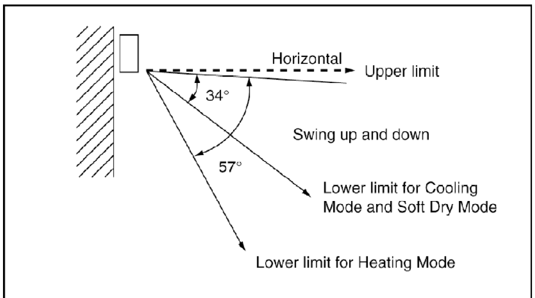
※ The left and right airflow direction louvers can be adjusted manually.

※1 There is no swinging while indoor fan is stopped during Cooling and Soft Dry operation.

※2 In Heating operation, when the indoor heat exchanger temperature rises to 38°C, the airflow direction is changed from upper limit to lower limit. When the indoor heat exchanger temperature falls to 35°C, the air flow direction is changed from lower limit to upper limit.

Airflow Direction Manual Control

- When the airflow direction set button is pressed, the automatic airflow is released and the airflow direction louver move up and down in the range shown in the diagram.
  The louver can be stopped by releasing the button at the desired louver position.
- When the remote control is used to stop the operation, the discharge vent is closed with airflow direction louver.


Horizontal
Upper limit
34°
Swing up and down
57°
Lower limit for Cooling Mode and Soft Dry Mode
Lower limit for Heating Mode

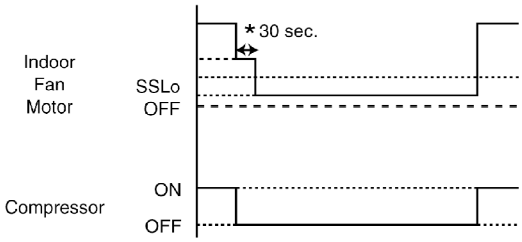
The louver can be adjusted with in a range "Airflow Direction Setting Button" is pressed.

※ **The left and right airflow direction louvers can be adjusted manually.**

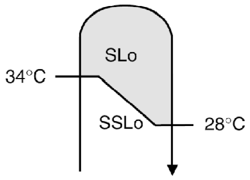
8.9. Delay ON Timer Control

- When the Delayed ON Timer is set by using the remote control, the unit will start operate slightly before the set time, so that the room will reach nearly to the set temperature by the desired time.
- For Cooling and Soft Dry mode, the operation will start 15 minutes before the set time.
- For Heating mode, the operation will start 30 minutes before the set time.
- For Automatic mode, the indoor fan will operate at SLo speed for 20 seconds, 30 minutes before the set time to detect the intake air temperature to determine the operation mode. The operation indication lamp will blink at this time.

8.10. Cold Draught Control



* For the first 30 sec from thermo off, fan speed will follow piping temp. as below.



- When COMP = Thermal OFF, indoor fan speed immediately changed to SLo for 30 sec., followed by SSLo speed until COMP = ON.
During cold draft c/m operation, fan speed will be SSLo only.
SSLo: Fan will be running at Lo speed with SSR ON for 0.6 sec. and OFF for 5.0 sec.

9. Operating Instructions

10. Installation Instructions

Required tools for Installation Works			
1. Phillips screw driver	5. Spanner	9. Gas leak detector	13. Multimeter
2. Level gauge	6. Pipe cutter	10. Measuring tape	14. Torque wrench 18 N.m (1.8 kgf.m) 65 N.m (6.5 kgf.m)
3. Electric drill, hole core drill (ø70 mm)	7. Reamer	11. Thermometer	15. Vacuum pump
4. Hexagonal wrench (4 mm)	8. Knife	12. Megameter	16. Gauge manifold

10.1. Safety Precautions

- Read this following “SAFETY PRECAUTIONS” carefully before installation.

- Electrical work must be installed by all licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model to be installed.

- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below.
Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indication.

⚠ **WARNING**	**This indication shows the possibility of causing death or serious injury.**

⚠ **CAUTION**	**This indication shows the possibility of causing injury or damage to prop**

The items to be followed are classified by the symbols:

⊘	**Symbol with background white denotes item that is PROHBITED from pip**

- Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instruction. Please remind the customer to keep the operating instructions for future reference.

⚠ WARNING

1. **Engage dealer or specialist for installation. If installation done by the user is defective, it will c water leakage, electrical shock or fire.**
2. **Install according to this installation instruction strictly. If installation is defective, it will cause leakage, electrical shock or fire.**
3. **Use the attached accessories parts and specified parts for installation. Otherwise, it will cause to fall, water leakage, fire or electrical shock.**
4. **Install at a strong and firm location which is able to withstand the set's weight. If the strength i enough or installation is not properly done, the set will drop and cause injury.**
5. **For electrical work, follow the local national wiring standard, regulation and this installation instruction. An independent circuit and single outlet must be used. If electrical circuit capacity enough or defect found in electrical work, it will cause electrical shock or fire.**
6. **Use the specified cable (2.5 mm^2) and connect tightly for indoor/outdoor connection. Connect and clamp the cable so that no external force will be acted on the terminal. If connection or fixi not perfect, it will cause heat-up or fire at the connection.**
7. **Wire routing must be properly arranged so that control board cover is fixed properly. If control cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electric**
8. **When carrying out piping connection, take care not to let air or other substances other than th specified refrigerant go into refrigeration cycle. Otherwise, it will cause lower capacity, abnorn pressure in the refrigerant cycle, explosion and injury.**
9. **Do not damage or use unspecified power supply cord. Otherwise, it will cause fire or electrical shock.**

⚠ WARNING

10. Do not modify the length of the power supply cord or use of the extension cord, and do not share the single outlet with other electrical appliances. Otherwise, it will cause fire or electrical shock.

⚠ CAUTION

1. Grounding is necessary. It may cause electrical shock if grounding is not perfect.
2. Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.
3. Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, v may enter the room and damage the furniture.

ATTENTION

1. Selection of the installation location.

   Select a installation location which is rigid and strong enough to support or hold the unit, and location for easy maintenance.
2. Power supply connection to the room air conditioner.

   Connect the power supply cord of the room air conditioner to the mains using one of the follo method.

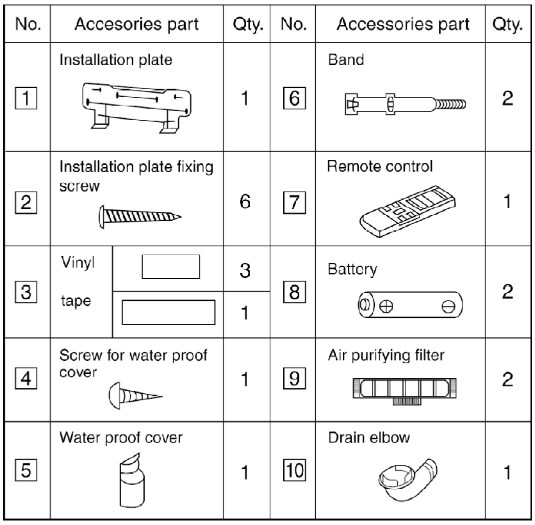
   Power supply point shall be the place where there is ease for access for the power disconnect case of emergency.In some countries, permanent connection of this room air conditioner to th supply is prohibited.

   1. Power supply connection to the receptacle using a power plug. Use an approved 16A power plug with earth pin for the connection receptacle.
   2. Power supply connection to a circuit breaker for the permanent connection. Use an approved 16A circuit breaker for the permanen It must be a double pole switch with a minimum 3 mm contact gap.
3. Do not release refrigerant.

   Do not release refrigerant during piping work for installation, re-installation and during repairi refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
4. Installation work.

   It may need two people to carry out the installation work.
5. Do not install this appliance in a laundry room or other location where water may drip from the etc.

Attached accessories



No.	Accesories part	Qty.	No.	Accessories part	Qty.
1	Installation plate	1	6	Band	2
2	Installation plate fixing screw	6	7	Remote control	1
3	Vinyl tape	3 1	8	Battery	2
4	Screw for water proof cover	1	9	Air purifying filter	2
5	Water proof cover	1	10	Drain elbow	1

Applicable: Flaring piping kit CZ-52F

SELECT THE BEST LOCATION

INDOOR UNIT

- **There should not be any heat source or steam near the unit.**
- **There should not be any obstacles blocking the air circulation.**
- **A place where air circulation in the room is good.**
- **A place where air drainage can be easily done.**
- **A place where noise prevention is taken into consideration.**
- **Do not install the unit near the door way.**
- **Ensure the spaces indicated by arrows from the wall, ceiling, or other obstacles.**
- **Indoor unit of this room air conditioner shall be installed on the wall in a height of at least 2.5 m.**

OUTDOOR UNIT

- **If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.**
- **There should not be any animal or plant which could be affected by hot discharged air.**
- **Keep the spaces indicated by arrows from wall, ceiling, fence or other obstacles.**

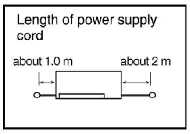
- Do not place any obstacles which may cause a short circuit of the discharged air.

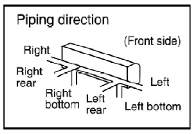
- If piping length is over 10 m, additional refrigerant should be added as shown in the table.

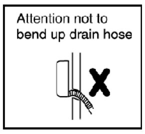
Piping length and the elevation

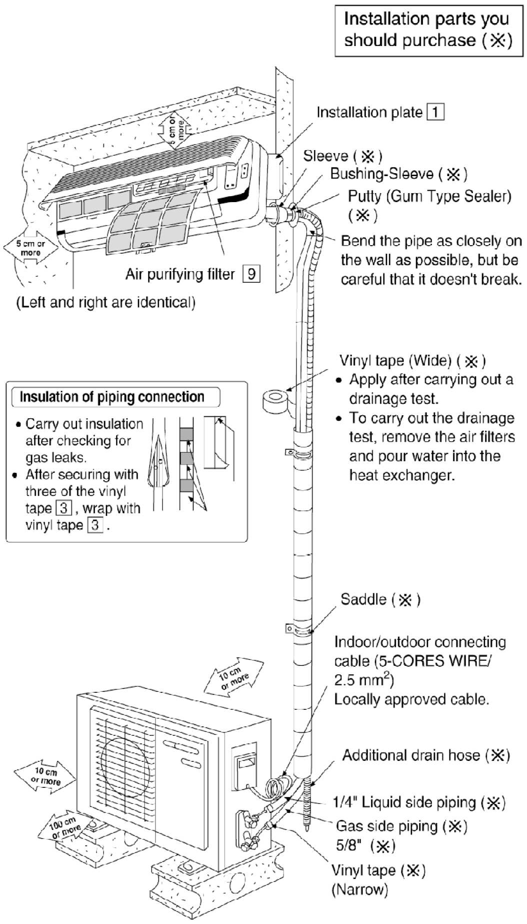
Model	Pipe size		Max. Piping Length A (m)	Max. Eleva-tion B (m)	Rated		Addi-tional Refri-gerant (g/m)
	Gas	/ / Liquid			/ Length	Eleva-tion	
A281KR	5/ 8”	1/4”	30	25	7.5	5	40

Indoor/Outdoor unit installation diagram


Length of power supply cord
about 1.0 m
about 2 m


Piping direction
(Front side)
Right
Right rear
Right bottom
Left rear
Left
Left bottom


Attention not to bend up drain hose
X


Installation parts you should purchase (※)
5 cm or more
Installation plate 1
Sleeve (※)
Bushing-Sleeve (※)
Putty (Gum Type Sealer) (※)
Bend the pipe as closely on the wall as possible, but be careful that it doesn't break.
5 cm or more
Air purifying filter 9
(Left and right are identical)
Insulation of piping connection
• Carry out insulation after checking for gas leaks.
• After securing with three of the vinyl tape 3, wrap with vinyl tape 3.
Vinyl tape (Wide) (※)
• Apply after carrying out a drainage test.
• To carry out the drainage test, remove the air filters and pour water into the heat exchanger.
Saddle (※)
Indoor/outdoor connecting cable (5-CORES WIRE/ 2.5 mm²)
Locally approved cable.
10 cm or more
10 cm or more
100 cm or more
Additional drain hose (※)
1/4" Liquid side piping (※)
Gas side piping (※)
5/8" (※)
Vinyl tape (※) (Narrow)

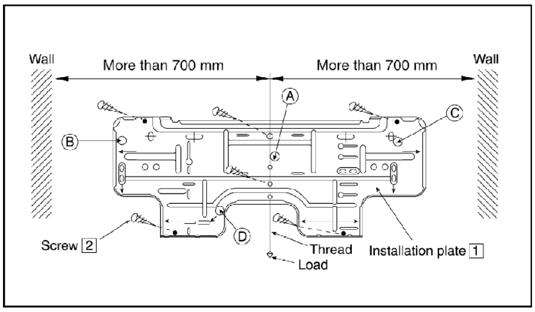
- This illustration is for explanation purposes only. / The indoor unit will actually face a different way.

10.2. INDOOR UNIT

10.2.1. SELECT THE BEST LOCATION / (Refer to “Select the best location” section)

10.2.2. HOW TO FIX INSTALLATION PLATE

The mounting wall is strong and solid enough to prevent it from the vibration.


Wall
More than 700 mm
More than 700 mm
Wall
A
B
C
D
Screw 2
Thread
Load
Installation plate 1

Ⓐ : **Unit centre should be at more than 700 mm at right and left of the wall.**
The height should be more than 250 mm from the ceiling.

Ⓑ : **From installation plate end to unit left side end is 55 mm.**

Ⓒ : **From installation plate end to unit right side end is 55 mm.**

Ⓓ : **Indoor outdoor connecting cable should be about 1100 mm from this line. (Only for left rear piping)**

1. **Mount the installation plate on the wall with 6 screws. / (If mounting the unit on the concrete wall, consider using anchor bolts.)**
    - **Always mount the installation plate horizontally by aligning the marking-off line with the thread and using a level gauge.**
2. **Drill the piping plate hole with ø70 mm hole-core drill.**
    - **Line according to the arrows marked on the lower left and right side of the installation plate. The meeting point of the extended line is the centre of the hole.**
    - **Drill the piping hole at either the right or the left and the hole should be slightly slant to the outdoor side.**

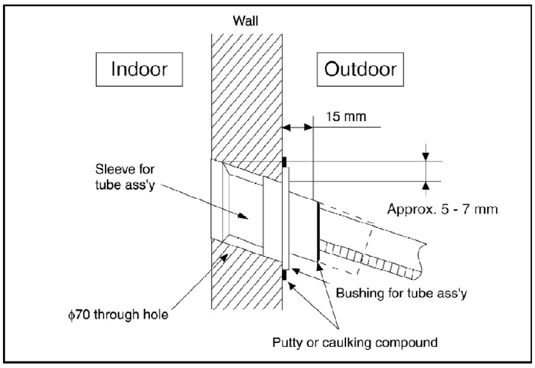
10.2.3. TO DRILL A HOLE IN THE WALL AND INSTALL A SLEEVE OF PIPING

1. **Insert the piping sleeve to the hole.**
2. **Fix the bushing to the sleeve.**
3. **Cut the sleeve until it extrudes about 15 mm from the wall.**

Caution

When the wall is hollow, please be sure to use the sleeve for tube ass'y to prevent dangers caused by mice biting the indoor/ outdoor connecting cable.

4. **Finish by sealing the sleeve with putty or caulking compound at the final stage.**


Wall
Indoor
Outdoor
15 mm
Sleeve for tube ass'y
Approx. 5 - 7 mm
Bushing for tube ass'y
ϕ70 through hole
Putty or caulking compound

10.2.4. INDOOR UNIT INSTALLATION

1. For the right rear piping

Pull out the Indoor piping

↓

Install the Indoor Unit

↓

Secure the Indoor Unit

↓

Insert the indoor/outdoor connecting cable

2. For the right and right bottom piping

Pull out the Indoor piping

↓

Install the Indoor Unit

↓

Insert the indoor/outdoor connecting cable

↓

Secure the Indoor Unit

3. For the embedded piping

Exchange the drain hose and the cap

Bend the embedded piping

- Use a spring bender or equivalent to bend the piping so that the piping is not crushed.

Install the Indoor Unit

Cut and flare teh embedded piping

- When determining the dimension of the piping, slide the unit all the way to the left on the installation plate.
  Refer to the section "Cutting and flaring the piping".

Pull the indoor/outdoor connecting cable into Indoor Unit

- The inside and outside indoor/outdoor connecting cable can be connected without removing the front grille.

Connect the piping

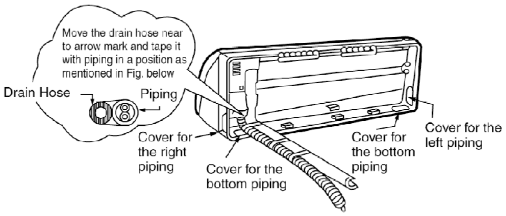
- Please refer to "Connecting the piping" column in outdoor unit section. (Below steps are done after connecting the outdoor piping and gas-leakage confirmation.)

Insulate and finish the piping

- Please refer to "Piping and finishing" column of outdoor section and "Insulation of piping connections" column as mentioned in Indoor/ Outdoor Unit Installation diagram.

Secure the Indoor Unit

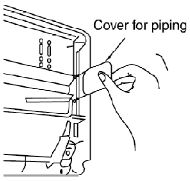
Pull out the piping and drain hose


Move the drain hose near to arrow mark and tape it with piping in a position as mentioned in Fig. below
Drain Hose
Piping
Cover for the right piping
Cover for the bottom piping
Cover for the bottom piping
Cover for the left piping

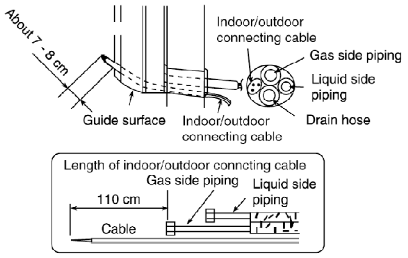
How to keep the cover

In case of the cover is cut, keep the cover at the rear of chassis as shown in the illustration for future reinstallation.

(Left, right and bottom covers for piping)

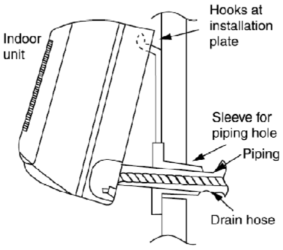

Cover for piping

Insert the indoor/outdoor connecting cable


About 7 - 8 cm
Indoor/outdoor connecting cable
Gas side piping
Liquid side piping
Guide surface
Indoor/outdoor connecting cable
Drain hose
Length of indoor/outdoor conncting cable
Gas side piping
Liquid side piping
110 cm
Cable

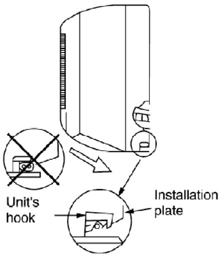
Install the indoor unit

Hook the indoor unit onto the upper portion of installation plate. (Engage the indoor unit with the upper edge of the installation plate). Ensure the hooks are properly seated on the installation plate by moving it in left and right.

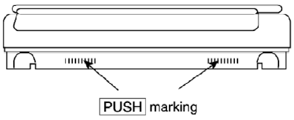

Indoor unit
Hooks at installation plate
Sleeve for piping hole
Piping
Drain hose

Secure the indoor unit

1. Tape the extra power supply cord in a bundle and keep it behind the chassis.
2. Press the lower left and right side of the unit against the installation plate until hooks engages with their slots (sound click).


Unit's hook
Installation plate

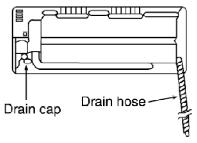
In case of to take out the unit, push the PUSH marking on the unit bottom, and pull it slightly towards you to disengage the hooks from the unit.

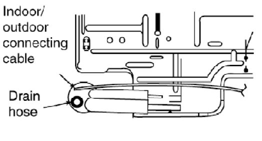

PUSH marking

(This can be used for left rear piping and left bottom piping also.)

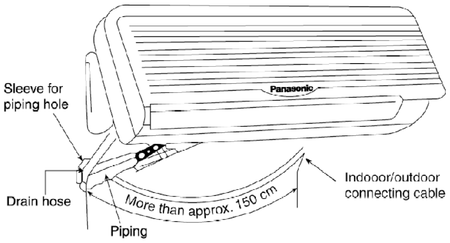
Exchange the drain hose and the cap

Refer view for left piping installation

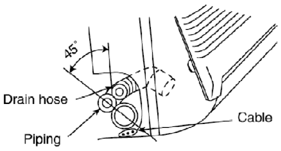

Drain cap
Drain hose


Indoor/ outdoor connecting cable
Drain hose

Adjust the piping slightly downwards

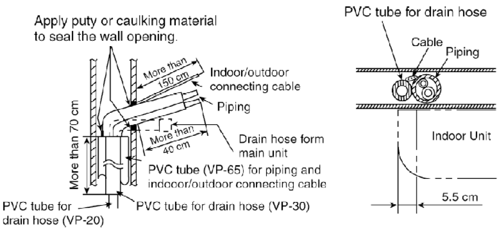

Sleeve for piping hole
Panasonic
Indooor/outdoor connecting cable
Drain hose
More than approx. 150 cm
Piping

- In case of left piping how to insert the indoor/outdoor connecting cable and drain hose.


45°
Drain hose
Cable
Piping

(For the right piping, follow the same procedure)

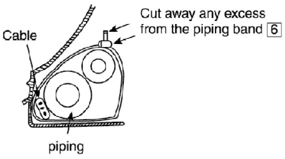
- In case of the embedded piping, how to pull the piping and drain hose out.


Apply puty or caulking material to seal the wall opening.
More than 150 cm
Indoor/outdoor connecting cable
Piping
More than 70 cm
More than 40 cm
Drain hose form main unit
PVC tube (VP-65) for piping and indooor/outdoor connecting cable
PVC tube for drain hose (VP-20)
PVC tube for drain hose (VP-30)
PVC tube for drain hose
Cable
Piping
Indoor Unit
5.5 cm

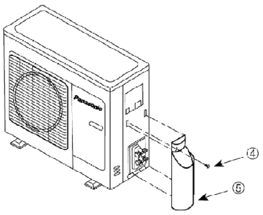
Be sure to insulate the PVC tube for drain hose

ATTACHMENT OF THE PIPING BAND

- Tighten the band so that the cable and the piping are secure. Be sure to cut any excess from the piping band (failure to cut away the excess piping band may produce abnormal noise during operation or condensation).


Cable
Cut away any excess from the piping band 6
piping

- The method of install water proof cover


Panasonic
④
⑤

- At first please fix the water proof cover on the cabinet then tighten the screw.

10.2.5. CONNECT THE CABLE TO THE INDOOR UNIT

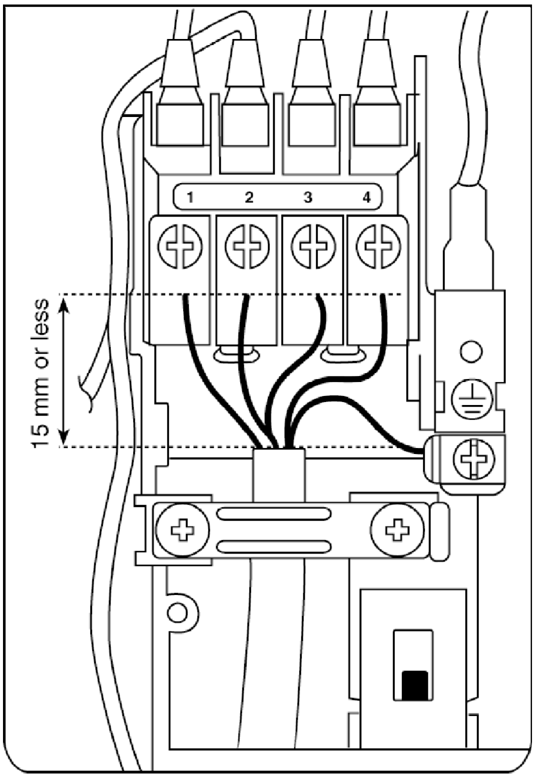
1. The inside and outside indoor/outdoor connecting cable can be

connected without removing the front grille.

2. **Indoor/outdoor connecting cable between indoor unit and outdoor unit shall be approved polychorprene sheathed 5 × 2.5 mm^2 flexible cord 245 IEC 57 (Rubber insulated cable GP 85PCP or HD 85PCP AS/NZS3191) or heavier cord.**
   Ensure the color of wires of outdoor unit and the terminal Nos. are the same to the Indoor's respectively.

Terminals on the indoor unit	1	2	3	4	⏚
Color of wires	▨	▨	▨	▨	■
Terminals on the outdoor unit	1	2	3	4	⏚

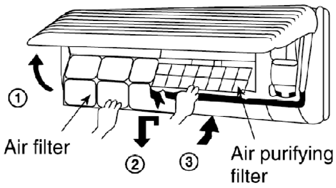
- **Secure the cable onto the control board with the holder (clamper).**



INSTALLATION OF AIR PURIFYING FILTERS

1. **Open the front panel.**
2. **Remove the air filters.**
3. **Hold the catechin filters by their tabs and install as shown in the**

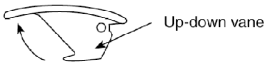
illustration at below.


①
Air filter
②
③
Air purifying filter

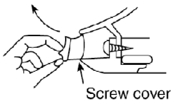
HOW TO TAKE OUT FRONT GRILLE

Please follow below steps to take out front grille if necessary such as when servicing. Remove the Grille from the chassis.

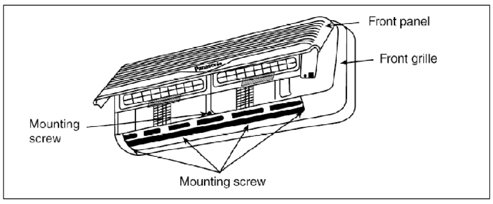
1. **Set the up-and-down air direction louver to open position (horizontally) by finger pressure.**


Up-down vane

2. **Open the three screw covers as shown in the illustration below.**


Screw cover

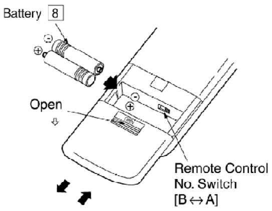
3. **Remove the five mounting screws.**
4. **Open the front panel and remove a mounting screw at the centre. (Refer Diagram below)**
5. **To remove the Grille, pull the lower left and right side of the grille towards you (slightly tilted) and lift it straight upwards (Two tabs on the top inside edge of the grille are clear of their slots).**


Front panel
Front grille
Mounting screw
Mounting screw

When reinstalling the front grille, first set the vertical airflow direction louver to the horizontal position and then carry out above steps 2 - 5 in the reverse order.

REMOTE CONTROL NO. SWITCH

1. **When installing two air conditioners in one room, each air conditioner can be synchronized to the remote controller.**
2. **In order to operate separately, open the rear cover of one of the remote controller and set the switch to “B”.**
3. **Also, set the remote control No. switch to “B” in the corresponding indoor unit.**
   (The switch is located in the control box-sub. of the indoor unit.)



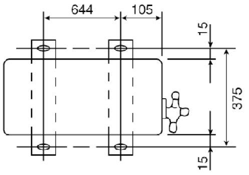
10.3. OUTDOOR UNIT

10.3.1. SELECT THE BEST LOCATION / (Refer to “Select the best location” section)

10.3.2. INSTALL THE OUTDOOR UNIT

- **After selecting the best location, start installation according to Indoor/Outdoor Unit Installation Diagram.**

1. **Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut. (ø10 mm).**
2. **When installing at roof, please consider strong wind and earthquake. Please fasten the installation stand firmly with bolt or nails.**



10.3.3. CONNECTING THE PIPING

Connect Piping to Indoor

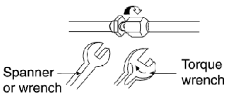
Please make flare after inserting flare nut (locate at joint portion of tube assembly) onto the copper pipe.

(In case of using long piping)

Connect the piping

- **Align the center of piping and sufficiently tighten the flare nut with fingers.**

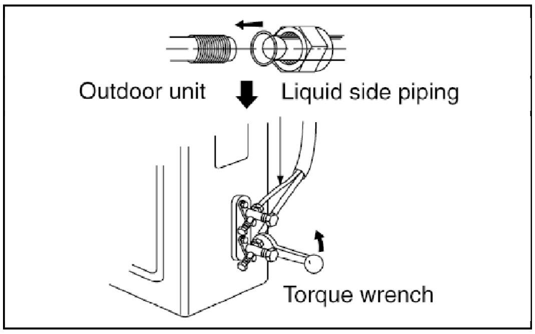
- Further tighten the flare nut with torque wrench in specified torque as stated in the table.



Model	Pipe size	Torque
A281KR	Liquid Side 1/4"	18 N.m
A281KR	Gas Side 5/8"	65 N.m

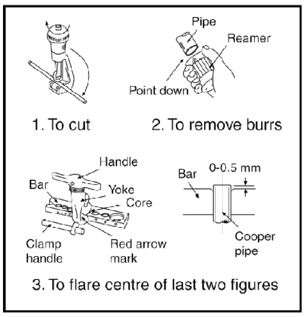
Connect the Piping to Outdoor Unit

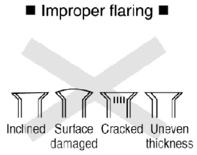
1. Align the center of the piping and sufficiently tighten the flare nut with fingers.
2. Finally, tighten the flare nut with torque wrench until the wrench clicks.
    - When tightening the flare nut with torque wrench, ensure the direction for tightening follows the arrow on the wrench.



CUTTING AND FLARING THE PIPING

1. Please cut using pipe cutter and then remove the burrs.
2. Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused.
   Turn the piping end down to avoid the metal powder entering the pipe.
3. Please make flare after inserting the flare nut onto the copper pipes.


Pipe
Reamer
Point down
1. To cut
2. To remove burrs
Handle
Bar
Yoke
Core
Bar
0-0.5 mm
Clamp handle
Red arrow mark
Cooper pipe
3. To flare centre of last two figures

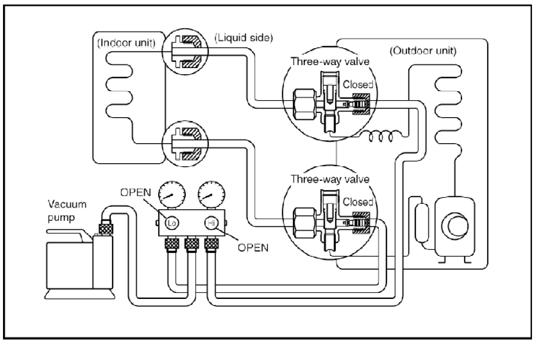

■ Improper flaring ■
Inclined
Surface damaged
Cracked
Uneven thickness

When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connectors, carefully check the flare finish.

10.3.4. EVACUATION OF THE EQUIPMENT

WHEN INSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.

If air remains in the indoor unit and refrigeration pipes, it will affect the compressor, reduce to cooling capacity, and could lead to a malfunction.


(Indoor unit)
(Liquid side)
(Outdoor unit)
Three-way valve
Closed
Three-way valve
Closed
OPEN
OPEN
Vacuum pump

SERVICE PORT CAP

Be sure, using a torque wrench to tighten the service port cap (after using the service port), so that it prevents the gas leakage from the refrigeration cycle.

Procedure:

1. **Connect a charging hose with a push pin to the Low and High sides of a charging set and the service port of the 3-way valve.**
    - **Be sure to connect the end of the charging hose with the push pin to the service port.**
2. **Connect the center hose of the charging set to a vacuum pump.**
3. **Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa). Then evacuate the air approximately ten minutes.**
4. **Close the valve of both the Low and High sides of the charging**

set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.
Note: BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID REFRIGERANT GAS LEAKAGE.

5. **Disconnect the charging hose from the vacuum pump and from the service port of the 3-way valve.**
6. **Tighten the service port caps of the 3-way valve at torque of 18 N.m with a torque wrench.**
7. **Remove the valve caps of both the 3-way valve. Position both of the valves to “OPEN” using a hexagonal wrench (4 mm).**
8. **Mount valve caps both of the 3-way valves.**

- Be sure to check for gas leakage.

CAUTION

- If gauge needle does not move from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa), in step 3 above take the following measure:
- If the leak stops when the piping connections are tightened further, continue working from step 3.
- If the leak does not stop when the connections are retightened, repair the location of leak.

10.3.5. CONNECT THE CABLE TO THE OUTDOOR UNIT

(FOR DETAIL REFER TIO WIRING DIAGRAM AT UNIT)

1. **Remove the control board cover from the unit by loosening the screw.**
2. **Indoor/outdoor connecting cable between indoor unit and outdoor unit shall be approved polychorprene sheathed 5 × 2.5 mm^2 flexible cord 245 IEC 57 (Rubber insulated cable GP 85PCP or HD 85PCP AS/NZS3191) or heavier cord.**

Terminals on the indoor unit	1	2	3	4	⏚
Color of wires	░	░	▒	▓	█
Terminals on the outdoor unit	1	2	3	4	⏚

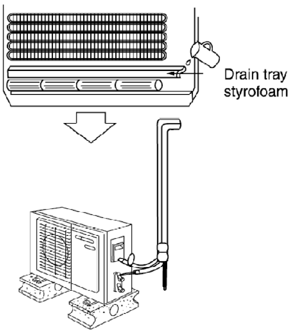
3. **Secure the cable onto the control board with the holder (clamper).**
4. **Attach the control board cover to the original position with the screw.**

10.3.6. PIPE INSULATION

1. **Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please wrap the insulated piping end to prevent water from going inside the piping.**
2. **If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with thickness 6 mm or above.**

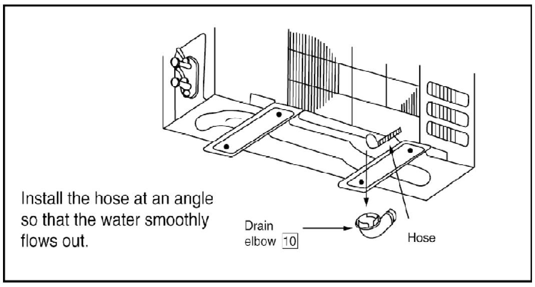
CHECK THE DRAINAGE

1. **Pour a glass of water into the drain tray-styrofoam.**
2. **Ensure if water flows out from drain hose of indoor unit.**



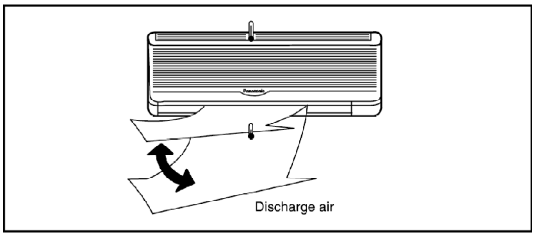
DISPOSAL OF OUTDOOR UNIT DRAIN WATER

- **If a drain elbow is used, the unit should be placed on a stand which is taller than 3 cm.**
- **If the unit is used in an area where temperature falls below 0°C for 2 or 3 days in succession, it is recommended not to use a drain elbow, for the drain water freezes and the fan will not rotate.**


Install the hose at an angle so that the water smoothly flows out.
Drain elbow 10
Hose

EVALUATION OF THE PERFORMANCE

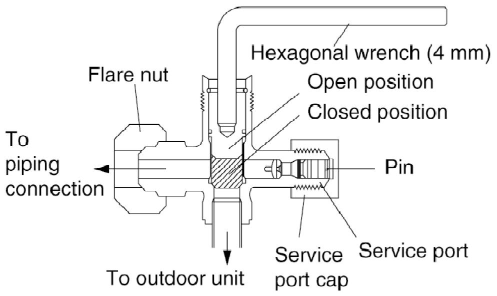
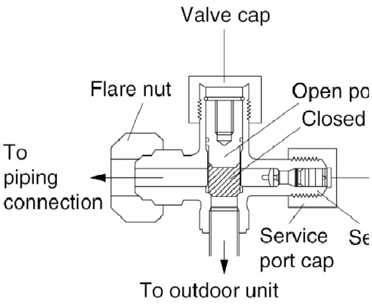
1. **Operate the unit at cooling operation mode for fifteen minutes or more.**
2. **Measure the temperature of the intake and discharge air.**
3. **Ensure the difference between the intake temperature and the discharge is more than 8°C.**


Discharge air

CHECK ITEMS

- ☐ **Is there any gas leakage at flare nut connections?**
- ☐ **Has the heat insulation been carried out at flare nut connection?**
- ☐ **Is the indoor/outdoor connecting cable being fixed to terminal board firmly?**
- ☐ **Is the indoor/outdoor connecting cable being clamped firmly?**
- ☐ **Is the drainage OK?**
  (Refer to “Check the drainage” section)
- ☐ **Is the earth wire connection properly done?**
- ☐ **Is the indoor unit properly hooked to the installation plate?**
- ☐ **Is the power supply voltage complied with rated value?**
- ☐ **Is there any abnormal sound?**
- ☐ **Is the cooling operation normal?**
- ☐ **Is the thermostat operation normal?**
- ☐ **Is the remote control’s LCD operation normal?**
- ☐ **Is the air purifying filter installed?**

11. 3-way Valve

	3-way Valve (Liquid Side)		3-way Valve (Gas Side	
				
Works	**Shaft Position**	**Service Port**	**Shaft Position**	**Servic**
Shipping	**Close (With valve cap)**	**Closed (With cap)**	**Closed (With valve cap)**	**Clo (With**
Evacuation (Installation and Re-installation)	**Closed (Clockwise)**	**Open (Connected manifold gauge w/charging cylinder)**	**Closed (Clockwise)**	**Op (Pus**
Operation	**Open (With valve cap)**	**Closed (With cap)**	**Open (With valve cap)**	**Clo (With**
Pumping down (Transferring)	**Closed (Clockwise)**	**Closed (With cap)**	**Open (Counter-Clockwise)**	**Op (Conn manifol**
Evacuation (Servicing)	**Open (Counter-Clockwise)**	**Open (Connected manifold gauge)**	**Open (Counter-Clockwise)**	**Op (Connecte gau**
Gas charging (Servicing)	**Open (Counter-Clockwise)**	**Open (Connected manifold gauge)**	**Open (Counter-Clockwise)**	**Op (Connecte gau**

Hexagonal wrench (4 mm)
Flare nut
Open position
Closed position
To piping connection
Pin
Service port
Service port cap
To outdoor unit

Valve cap
Flare nut
Open po
Closed
To piping connection
Service port cap
Se
To outdoor unit

	3-way Valve (Liquid Side)		3-way Valve (Gas Side)	
Pressure check (Servicing)	Open (Counter-Clockwise)	Open (Connected manifold gauge)	Open (Counter-Clockwise)	Op (Conn mani gau
Gas releasing (Servicing)	Open (Counter-Clockwise)	Open (Connected manifold gauge)	Open (Counter-Clockwise)	Op (Conn mani gau

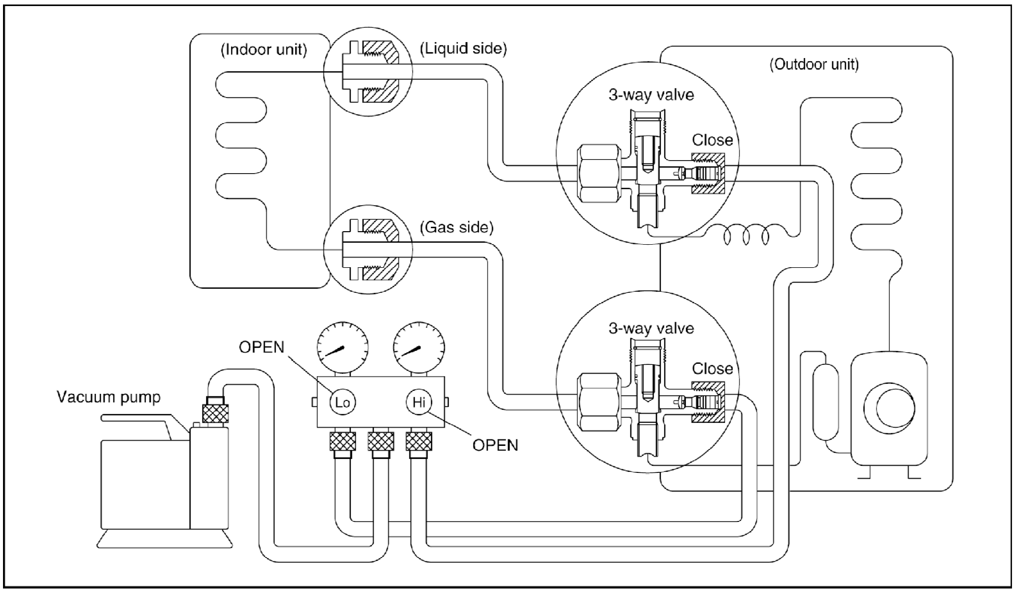
11.1. Evacuation of Installation

When installing an air conditioner, be sure to evacuate the air inside the indoor unit and pipes in the following procedure.

Required tools:

hexagonal wrench, adjustable wrench, torque wrenches, wrench to hold the joints, gas leak detector, and charging set.

The air in the indoor unit and in the piping must be purged. If air remains in the refrigeration pipings, it will affect the compressor, reduce the cooling capacity, and could lead to a malfunction.


(Indoor unit)
(Liquid side)
(Outdoor unit)
3-way valve
Close
(Gas side)
3-way valve
Close
OPEN
Vacuum pump
Lo
Hi
OPEN

Service port cap
Be sure, using a torque wrench to tighten the service port cap (after using the service port), so th prevents the gas leakage from the refrigeration cycle

Procedure:

1. **Connect a charging hose with a push pin to the Low and High sides of a charging set and the service ports of a 3-way valve.**

   - Be sure to connect the end of the charging hose with the push pin to the service port.

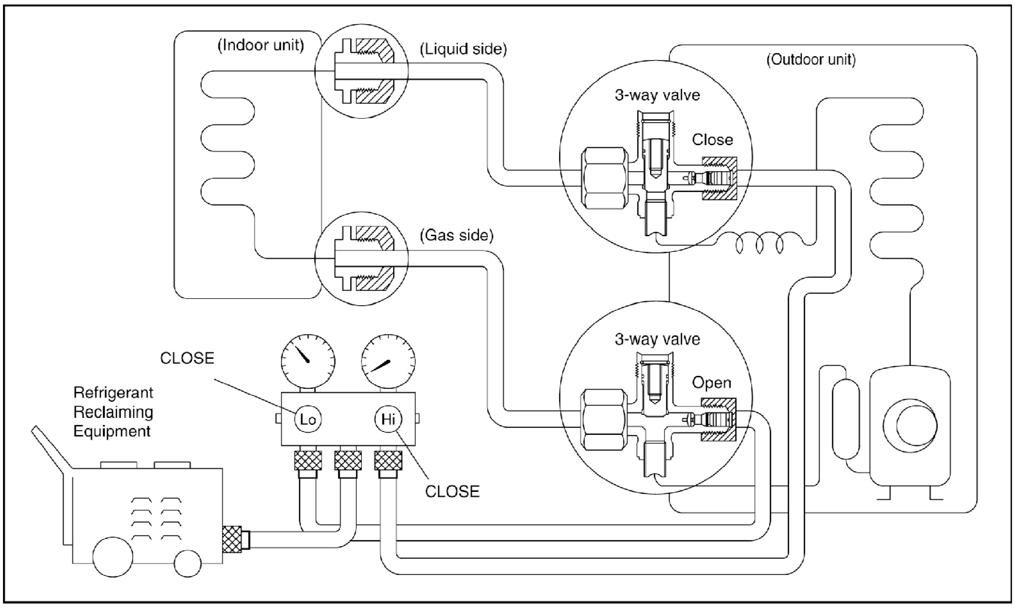
2. **Connect the centre hose of the charging set to a vacuum pump.**
3. **Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa). Then evacuate the air for approximately 10 minutes.**
4. **Close the valve of both the Low and High sides of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately 5 minutes.**
   BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID REFRIGERANT GAS LEAKAGE.
5. **Disconnect the charging hose from the vacuum pump and from the service port of the 3-way valve.**
6. **Tighten the service port caps of both the 3-way valves at a torque of 18 N.m with a torque wrench.**
7. **Remove the valve caps of the 3-way valves. Position both of the valves to “open” using a hexagonal wrench (4 mm).**
8. **Mount the valve caps onto both of the 3-way valves.**

   - Be sure to check for gas leakage.

Caution

If gauge needle does not move from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa) in step (3) above, take the following measures:
If the leaks stop when the piping connections are tightened further, continue working from step (3).
If the leaks do not stop when the connections are retightened, repair the location of the leak.

11.2. Pumping down


(Indoor unit)
(Liquid side)
(Outdoor unit)
3-way valve
Close
(Gas side)
3-way valve
Open
CLOSE
Refrigerant Reclaiming Equipment
Lo
Hi
CLOSE

Procedure:

1. **Confirm that both the 3-way valves are set to the open position.**

- Remove the valve stem caps and confirm that the valve stems are in the open position.
- Be sure to use a hexagonal wrench to operate the valve stems.

2. Operate the unit for 10 to 15 minutes.

3. Stop operation and wait for 3 minutes, then connect the charge

set to the service port of the 3-way valve.

- Connect the charge hose with the push pin to the Gas side service port.

4. Air purging of the charge hose.

- Open the low-pressure valve on the charge set slightly to purge air from the charge hose.

5. Set the Liquid side 3-way valve to the close position.

6. Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 0 kg/cm^{2}G (0 MPa).

- If the unit cannot be operated at the cool condition (weather is rather cool), press the Pump Down Switch on the Indoor unit.
- So that the unit can be operated.

7. Immediately set the gas side 3-way valve to the close position.

- Do this quickly so that the gauge ends up indicating 1 to 3 kg/cm^{2}G (0.1 MPa to 0.3 MPa).

8. Use refrigerant reclaiming equipment to collect refrigerant from indoor unit and pipes.

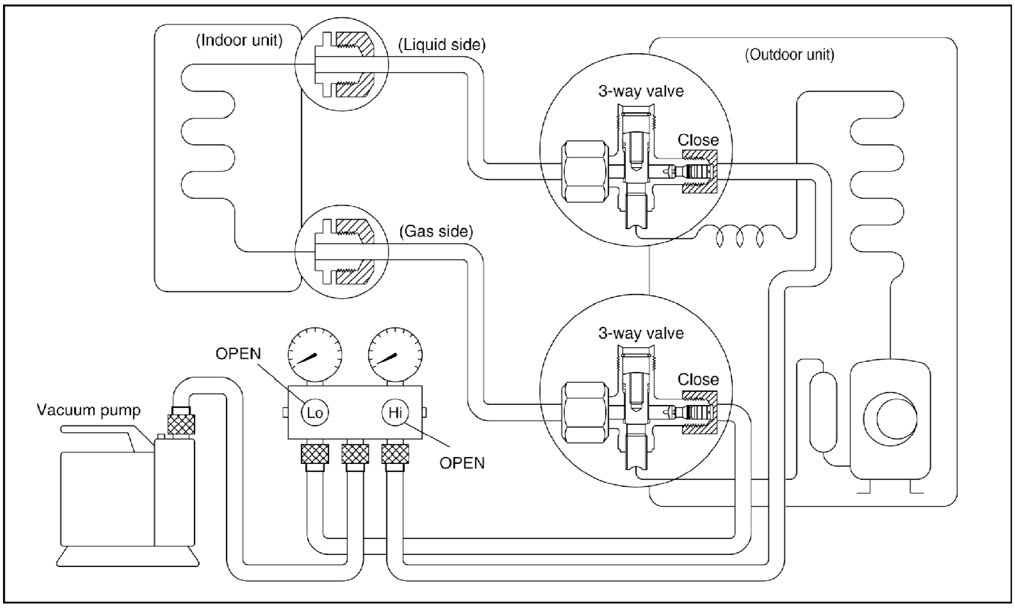
9. Disconnect the charge set, and mount both the 3-way valve’s stem nuts and the service port caps.

- Use a torque wrench to tighten the service port cap to a torque of 18 N.m.
- Be sure to check for gas leakage.

10. Disconnect pipes from indoor unit and outdoor unit.

11.3. Evacuation of Re-installation

WHEN REINSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.
If air remain in the indoor unit and refrigeration pipes, it will affect the compressor, reduce to cooling capacity, and could lead to a malfunction.


(Indoor unit)
(Liquid side)
(Outdoor unit)
3-way valve
Close
(Gas side)
3-way valve
Close
OPEN
Vacuum pump
Lo
Hi
OPEN

Procedure:

1. **Connect a charging hose with a push pin to the Low and High sides of a charging set and the service port of the 3-way valve.**
   - **Be sure to connect the end of the charging hose with the push pin to the service port.**
2. **Connect the centre hose of the charging set to a vacuum pump.**
3. **Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa). Then evacuate the air for approximately 10 minutes.**
4. **Close the valve of both Low side and High side of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately 5 minutes.**
   BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID REFRIGERANT GAS LEAKAGE.
5. **Disconnect the charging hose from the vacuum pump.**
6. **Charge the pipes and indoor unit with gas refrigerant from liquid (High) side 3-way valve service port and then discharge the refrigerant until gas (Low) side gauge needle indicates 3 kg/cm$_2$ (0.3 MPa).**

- BE SURE TO USE REFRIGERANT RECLAIMING EQUIPMENT WHILE DISCHARGING THE REFRIGERANT.
- **Purge the air from charge set's centre hose.**
- **Be sure to check for gas leakage.**

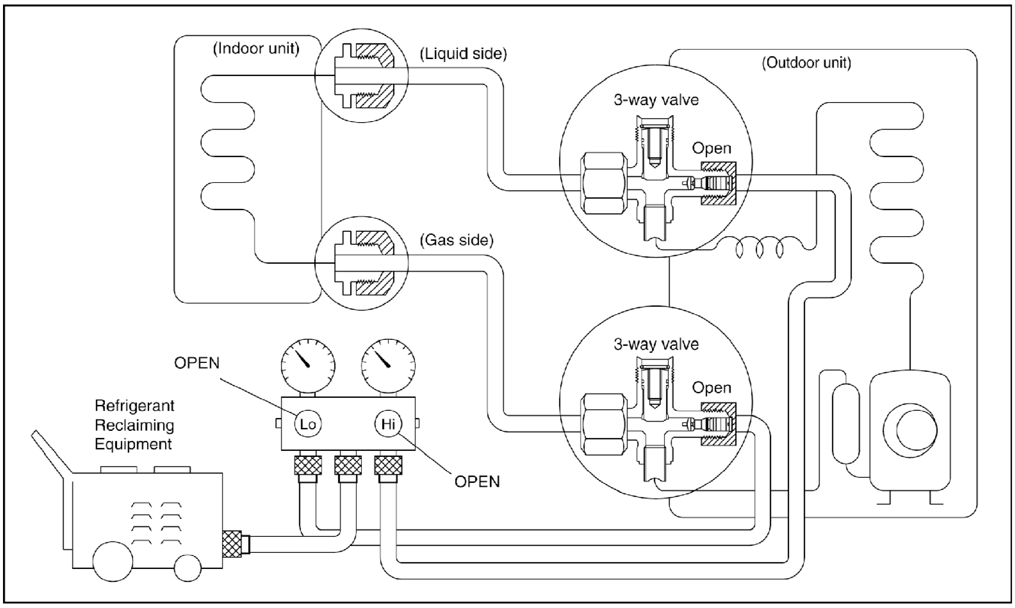
Caution

If gauge needle does not move from 0 cmHg (0 MPA) to -76 cmHg (0.1 MPa) in step (3) above, take the following measures:
If the leaks stop when the piping connections are tightened further, continue working from step 3.
If the leaks do not stop when the connections are retightened, repair the location of the leak.

7. **Tighten the service port caps of both the 3-way valves at a torque of 18 N.m with a torque wrench.**
8. **Remove the valve caps of both the 3-way valves. Position both of the valves to "open" using a hexagonal wrench (4 mm).**
9. **Mount the valve caps onto the 3-way valves.**

11.4. Balance refrigerant of the 3-way valves

(Lack of refrigerant in the refrigeration cycle)


(Indoor unit)
(Liquid side)
(Outdoor unit)
3-way valve
Open
(Gas side)
3-way valve
Open
OPEN
Refrigerant
Reclaiming
Equipment
Lo
Hi
OPEN

Procedure:

1. Confirm that both the 3-way valves are set to the open position.

2. Connect the charge set to the 3-way valve's service port.

- **Leave the valve on the charge set closed.**
- **Connect the charge hose with the push-pin to the service port.**
- **Confirm whether the pressure indicates more than 0.1 MPa (1 kg/cm$_2$G).**

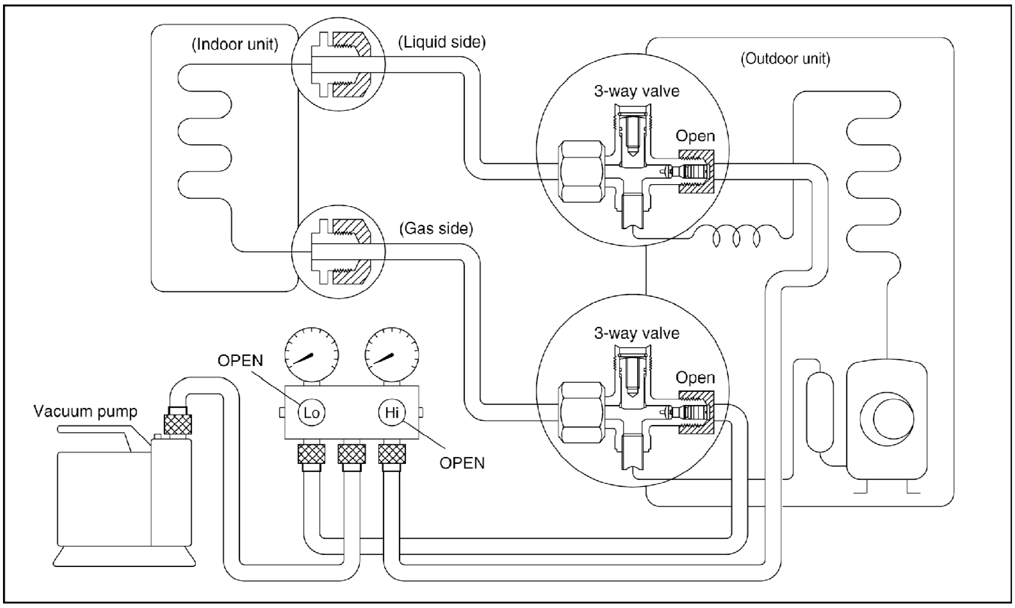
3. Connect the charge set's centre hose to refrigerant reclaiming equipment.

4. Open the valve (Low side) on the charge set and loosen the hose connected with the Refrigerant Reclaiming Equipment to purge the air from the hose.

5. Turn on refrigerant reclaiming equipment to collect the refrigerant until the needle indicates 0 (no refrigerant is remaining).

11.5. Evacuation

(No refrigerant in the refrigeration cycle)

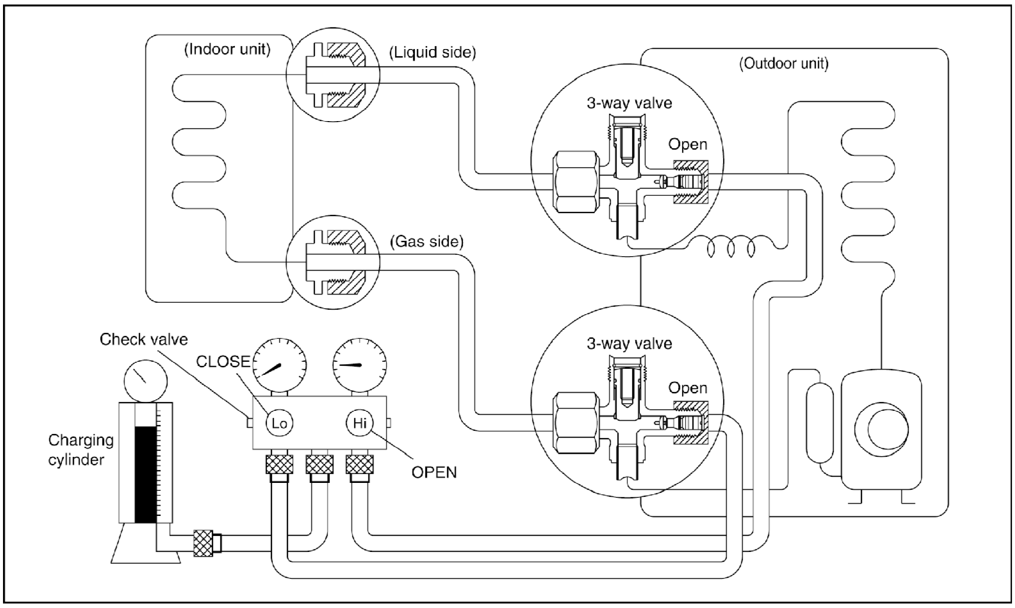

(Indoor unit)
(Liquid side)
(Outdoor unit)
3-way valve
Open
(Gas side)
3-way valve
Open
OPEN
Vacuum pump
Lo
Hi
OPEN

Procedure:

1. **Connect the vacuum pump to the charge set's centre hose.**
2. **Turn on the vacuum pump to evacuate the unit.**
   - **Confirm that the gauge needle has moved toward -76 cmHg (-0.1 MPa).**
   - **Apply the vacuum for approximately 1 hour (vacuum of 4 mmHg or less).**
3. **Close the valve (Low side and High side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle does not move (approximately 5 minutes after the vacuum pump is turned off).**
4. **Disconnect the charge hose from the vacuum pump.**

11.6. Gas charging

(After Evacuation)


(Indoor unit)
(Liquid side)
(Outdoor unit)
3-way valve
Open
(Gas side)
Check valve
CLOSE
3-way valve
Open
Lo
Hi
Charging cylinder
OPEN

Procedure:

1. **Connect the charge hose to the charging cylinder.**
   - **Connect the charge hose which was disconnected from the vacuum pump to the valve at the bottom of the cylinder.**
2. **Purge the air from the charge hose.**
   - **Open the valve at the bottom of the cylinder and use a screwdriver to press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).**
3. **Open the High side on the charge set and charge the refrigerant to the unit.**
   - **Be sure to open only the High side valve on the charge set to charge the system from the liquid-side (high-presure) pipe. (If the system cannot be charged with the specified amount of refrigerant, operate the compressor until the specified amount can be charged, and then close the valve at the bottom of the charge cylinder.)**
4. **Immediately disconnect the charge hose from both the 3-way valve service ports.**
5. **Mount the valve stem nuts and the service port caps onto the 3-way valves.**

- Use torque wrench to tighten the service port caps to a torque of 18 N.m.
- Be sure to check for gas leakage.

12. Servicing Information

(A) Disassembly of the parts (Indoor Unit)

- Inspection points for the Indoor Electronic Controller

1. **The Electronic Controller, a signal Receiver and an Indicator can be seen by removing the Front Grille and Control Board Cover, as shown in the .**

- Indoor Fan Motor removal procedure:-

1. **Remove the connector CN-C of Fan Motor and connector CN-STM of stepping motor from the electronic controller. Release the earth wire (YELLOW-GREEN) from the control board terminal and sensors from its holders. (Refer .)**
2. **Remove the Control Board.**
   As shown in remove the 5 screws. Pull the control board forward slightly.

Caution:

Remove of Discharge Grille before removing the control board is necessary to avoid damaging other parts.

Fig. 1

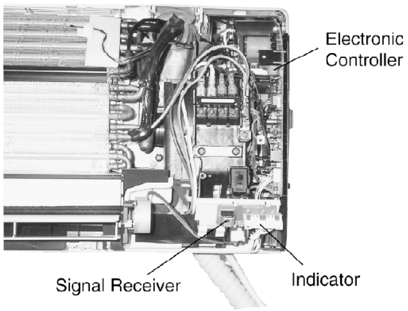


Fig. 2

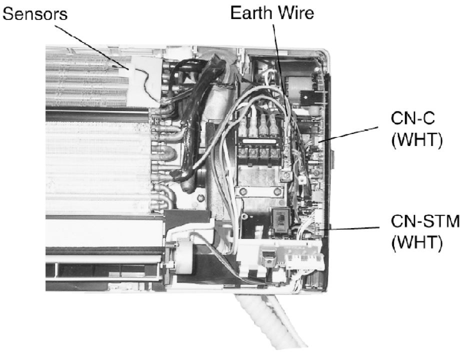
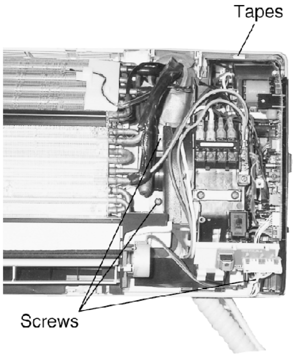

Sensors
Earth Wire
CN-C
(WHT)
CN-STM
(WHT)

Fig. 3


Tapes
Screws

3. Remove the Discharge Grille.

Remove the Discharge Grille and then pull the Discharge Grille in a down and forward direction.

4. Remove the Indoor Fan Motor.

Loosen the Fan Mounting Screw at the junction with Cross Flow Fan.

Loosen the screw at the left side of the evaporator.

Pull off the Bearing at the left of the Cross Flow Fan.

Fig. 4

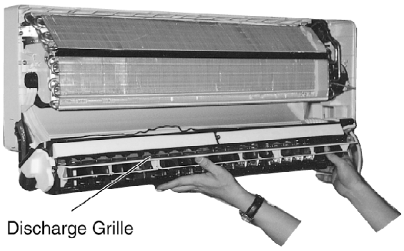

Discharge Grille

Fig. 5

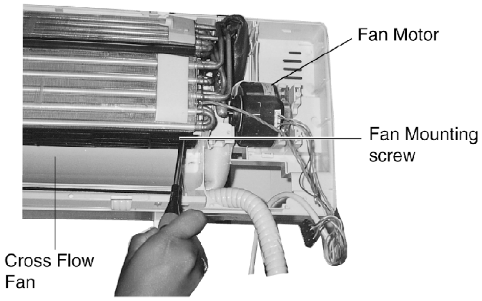

Fan Motor
Fan Mounting screw
Cross Flow Fan

Fig. 6

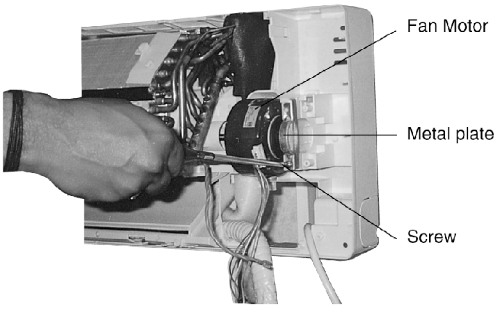
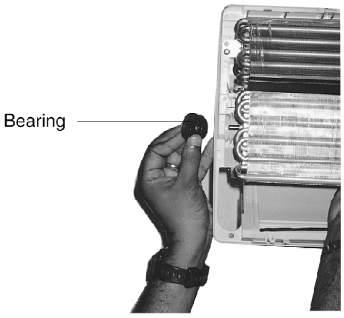

Fan Motor
Metal plate
Screw

Fig. 7



- Cross Flow Fan Removal Procedure.

1. **(Refer to No. 4 of Indoor Fan Motor the removal procedure) Loosen the screw at the right side of the evaporator.**
2. **Pull the left side of the evaporator forward slightly and remove the cross Flow Fan.**

(B) Disassembly of the parts (Outdoor Unit)

- Inspection points for the Outdoor Electronic Controller

1. **The Electronic Controller, Can be seen by removing the cabinet Top plate and Front plate, as shown in the .**

Fig. 8

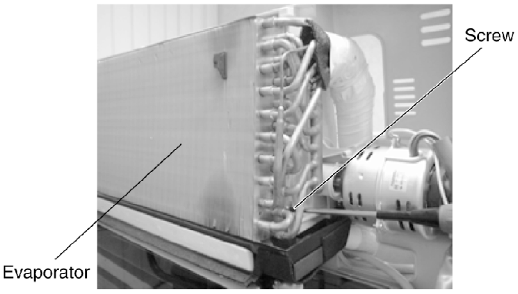

Screw
Evaporator

Fig. 9

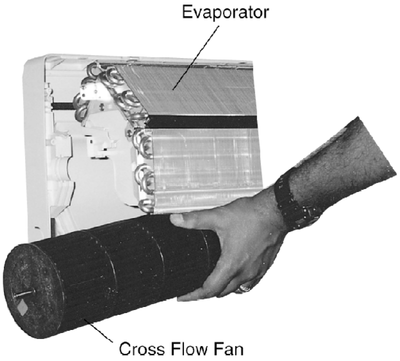
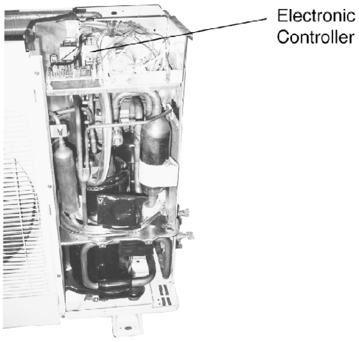

Evaporator
Cross Flow Fan

Fig. 10


Electronic
Controller

(C) Remote Control Transmission Setting

- Remote Control Reset

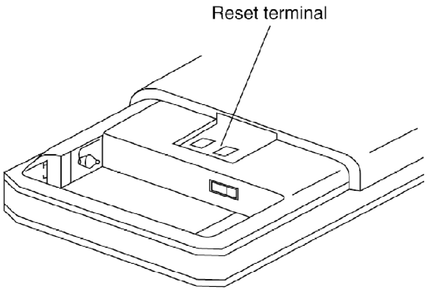
When the batteries are inserted for the first time, or the batteries are replaced, all the indications will blink and the remote control might not work.

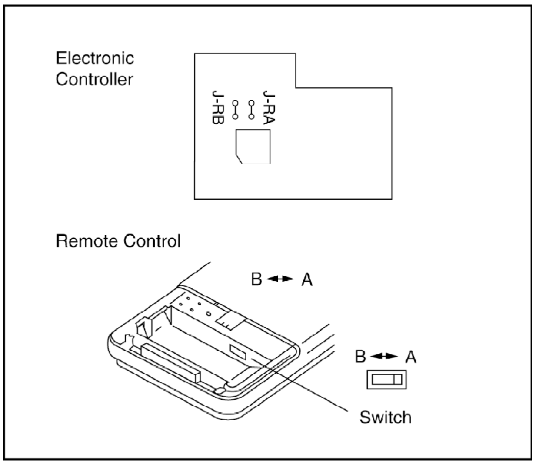
If this happen, remove the back cover of the remote control and you will find a resetting terminal, and by shorting it with a minus screwdriver, it will return to normal.

- Changing the wireless remote control transmission code

When two indoor units are installed in the same room, in order to

prevent operating errors caused by using two remote controls, set up the remote control [B ←→ A] switch (SW1).
The unit is set to A when it is shipped.


Reset terminal


Electronic Controller
J-RB
J-RA
Remote Control
B ◄► A
B ◄► A
Switch

- **By adding a jumper wire to the remote control side and CUTTING J-RA, J-RB to the indoor printed circuit board, it is possible to select from 4 types of transmission codes including one at time of delivery condition (1).**

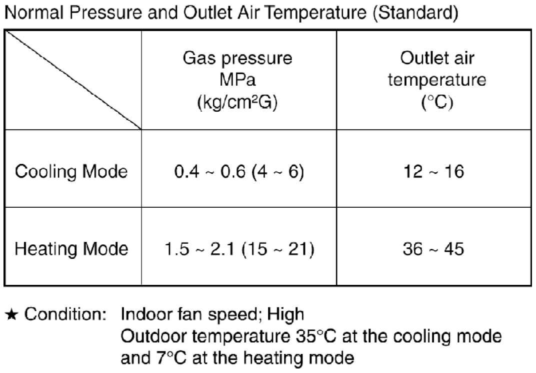
	Remote Control		**Indoor printed circuit board**		**N**
	Switch SW B ←→ A	**J - B**	**J - RA**	**J - RB**	
1	**A**	**——**	**SHORT**	**SHORT**	**At p de**
2	**B**	**——**	**SHORT**	**OPEN**	
3	**A**	**Jumper wire**	**OPEN**	**SHORT**	
4	**B**	**Jumper wire**	**OPEN**	**OPEN**	

13. Troubleshooting Guide

13.1. Refrigeration cycle system

In order to diagnose malfunctions, make sure that there are no electrical problems before inspecting the refrigeration cycle. Such problems include insufficient insulation, problem with the power source, malfunction of a compressor and a fan.

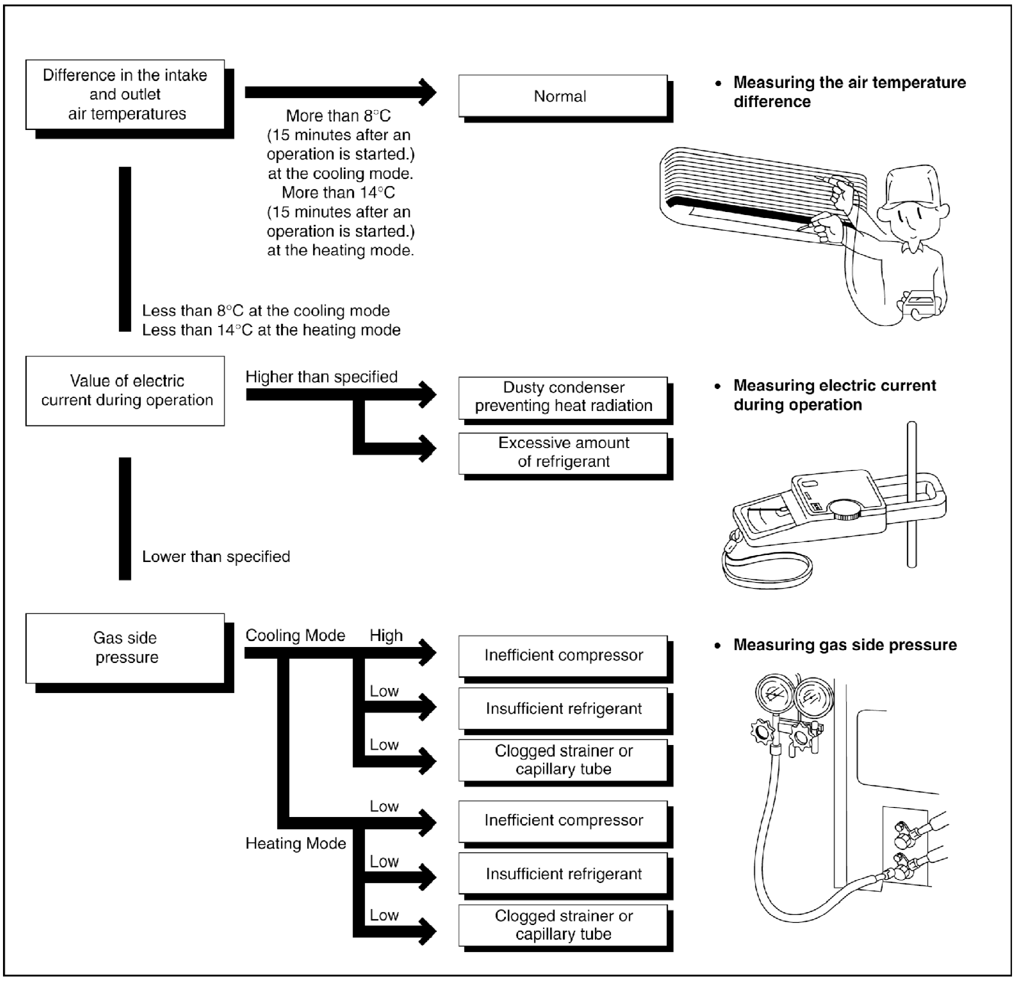
The normal outlet air temperature and pressure of the refrigeration cycle depends on various conditions, the standard values for them are shown in the table to the right.



Normal Pressure and Outlet Air Temperature (Standard)

	Gas pressure MPa (kg/cm^{2}G)	Outlet air temperature (°C)
Cooling Mode	0.4 ~ 0.6 (4 ~ 6)	12 ~ 16
Heating Mode	1.5 ~ 2.1 (15 ~ 21)	36 ~ 45

★ Condition: Indoor fan speed; High
Outdoor temperature 35°C at the cooling mode
and 7°C at the heating mode


Difference in the intake and outlet air temperatures
More than 8°C (15 minutes after an operation is started.) at the cooling mode. More than 14°C (15 minutes after an operation is started.) at the heating mode.
Normal
• Measuring the air temperature difference
Less than 8°C at the cooling mode
Less than 14°C at the heating mode
Value of electric current during operation
Higher than specified
Dusty condenser preventing heat radiation
Excessive amount of refrigerant
• Measuring electric current during operation
Lower than specified
Gas side pressure
Cooling Mode
High
Inefficient compressor
Low
Insufficient refrigerant
Low
Clogged strainer or capillary tube
Heating Mode
Low
Inefficient compressor
Low
Insufficient refrigerant
Low
Clogged strainer or capillary tube
• Measuring gas side pressure

13.1.1. Relationship between the condition of the air conditioner and pressure and electric current

Condition of the air conditoner	Cooling Mode			Heating Mode		
	Low Pressure	High Pressure	Electric current during operation	Low Pressure	High Pressure	El cu du op
Insufficient refrigerant (gas leakage)	↘	↘	↘	↘	↘	
Clogged capillary tube or Strainer	↘	↘	↘	↘	↘	
Short circuit in the indoor unit	↘	↘	↘	↗	↗	
Heat radiation deficiency of the outdoor unit	↗	↗	↗	↘	↘	
Inefficient compression	↗	↘	↘	↗	↘	

- Carry out the measurements of pressure, electric current, and temperature fifteen minutes after an operation is started.

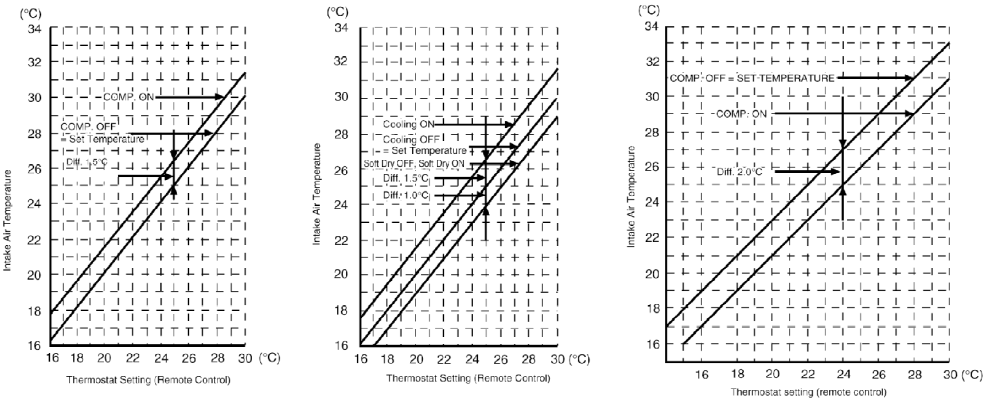
13.1.2. Diagnosis methods of a malfunction of a compressor and 4-way valve

Nature of fault	Symptom
Insufficient compressing of a compressor	**-Electric current during operation becomes approximately 20% lower than the normal valu** **-The discharge tube of the compressor becomes abnormally hot (normally 70 to 90°C).** **-The difference between high pressure and low pressure becomes almost zero.**
Locked compressor	**-Electric current reaches a high level abnormally, and the value exceeds the limit of an am some cases, a breaker turns off.** **-The compressor is a humming sound.**
Inefficient switches of the 4-way valve	**-Electric current during operation becomes approximately 80% lower than the normal valu** **-The temperature difference between from the discharge tube to the 4-way valve and from tube to the 4-way valve becomes almost zero.**

14. Technical Data

■ Thermostat characteristics

CS-A281KR



- **Cooling**
- **Soft Dry**
- **Heating**

■ Sensible Capacity Chart

CS-A281KR

Cooling	Outdoor Temp. (°C)											
Indoor Wet Bulb Temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	7.74	6.91	2.43	7.36	6.77	2.62	6.89	6.30	2.80	6.24	5.43	3.02
19.0°C				8.00		2.65						
19.5°C	8.60	5.98	2.46	8.16	5.67	2.65	7.60	5.64	2.84	6.96	5.42	3.05
22.0°C	9.61	5.62	2.50	9.04	4.99	2.68	8.40	4.44	2.90	7.68	3.89	3.10

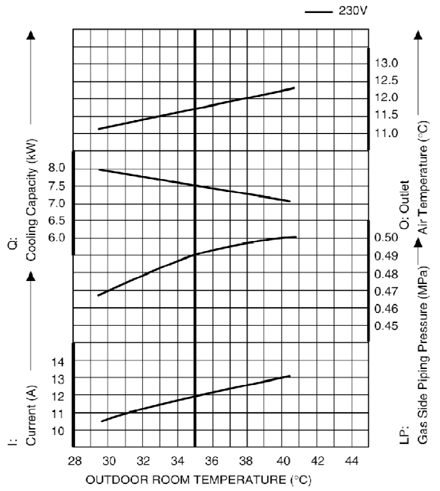
TC - Total Cooling/Heating Capacity (kW)
SHC - Sensible Heat Capacity (kW)
IP - Input Power (kw)

Indoor 27°C/19°C
Outdoor 35°C/24°C

■ Operation characteristics

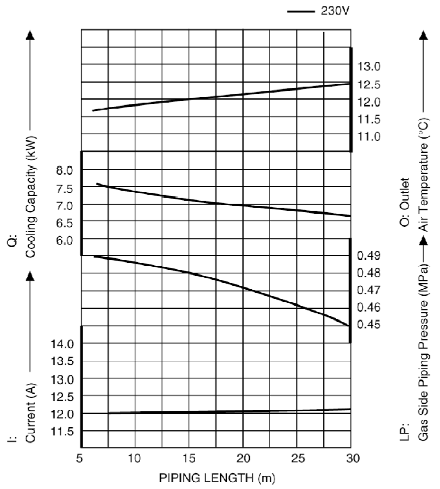
CS-A281KR.CU-A281KR

- **Cooling Characteristic**



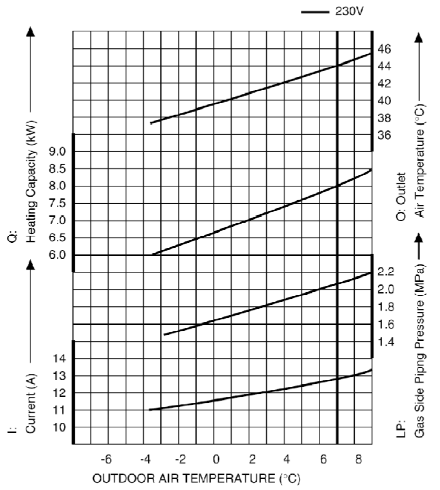
[Condition] Room temperature: 27/19°C
Cooling operation: High fan
Piping length: 7.5 m

- **Piping Length Characteristic (Cooling)**



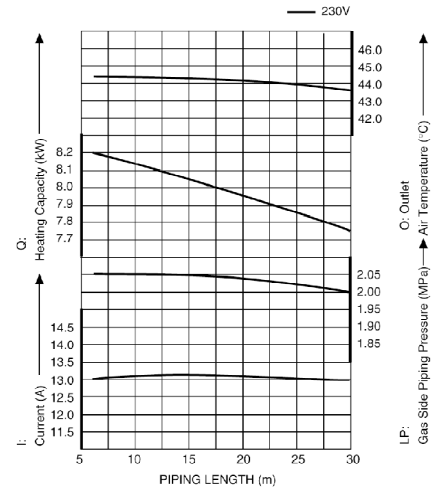
[Condition] Room temperature: 27/19°C
Outdoor air temperature: 35/24°C
Cooling operation: High fan

- **Heating Characteristic**



[Condition] Room temperature: 20°C
Heating operation: High fan
Piping length: 7.5 m

- **Piping Length Characteristic (Heating)**

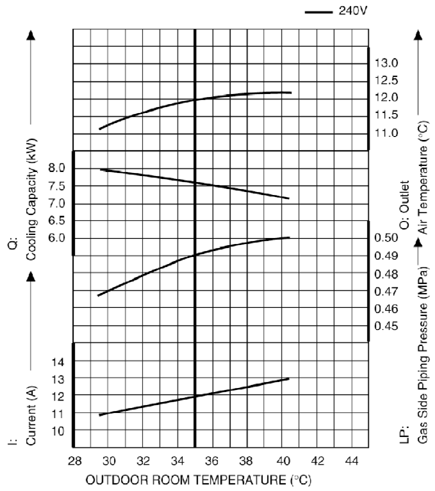


[Condition] Room temperature: 20°C
Outdoor temperature: 7/6°C
Heating operation: High fan

Operation characteristics

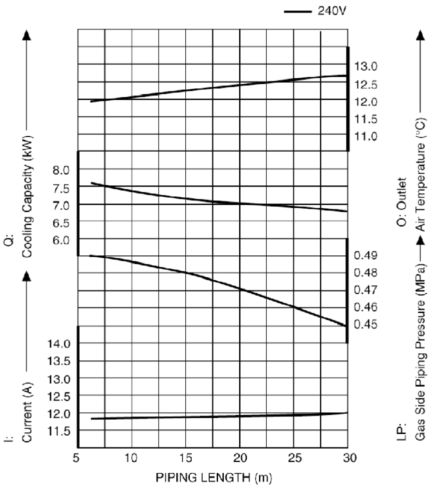
CS-A281KR.CU-A281KR

- **Cooling Characteristic**



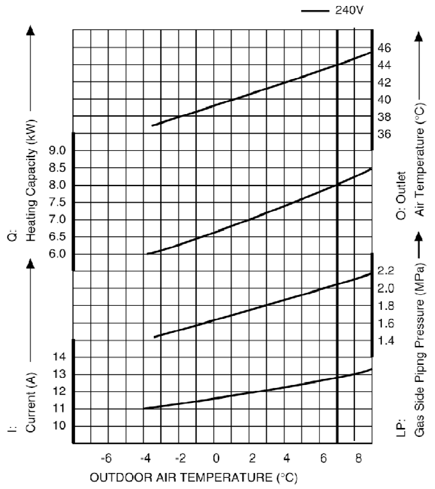
[Condition] Room temperature: 27/19°C
Cooling operation: High fan
Piping length: 7.5 m

- **Piping Length Characteristic (Cooling)**



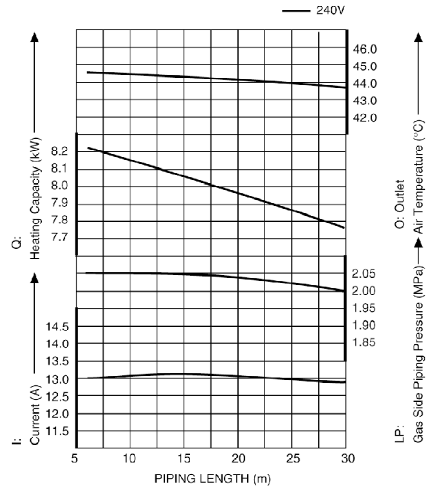
[Condition] Room temperature: 27/19°C
Outdoor air temperature: 35/24°C
Cooling operation: High fan

- **Heating Characteristic**



[Condition] Room temperature: 20°C
Heating operation: High fan
Piping length: 7.5 m

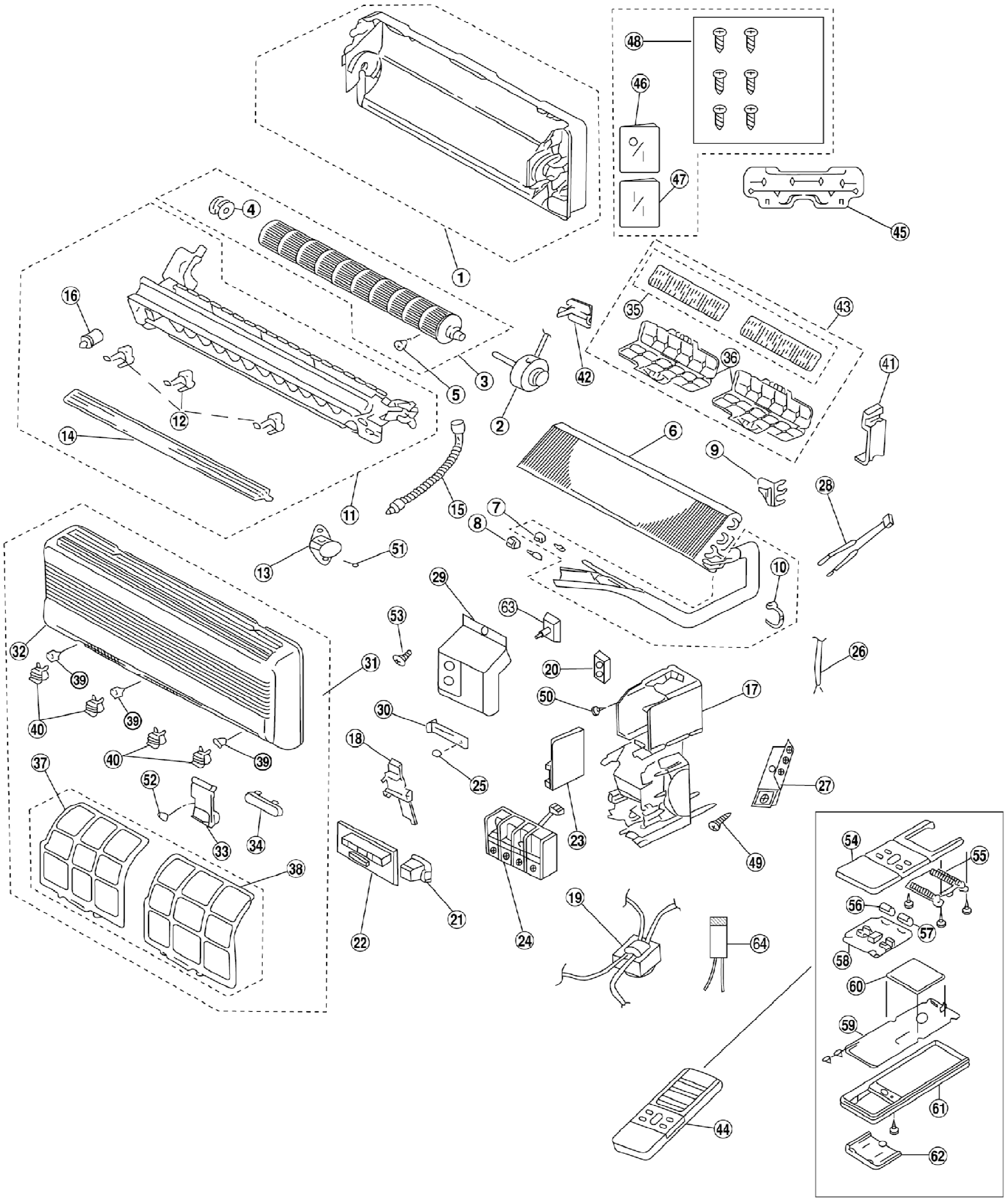
- **Piping Length Characteristic (Heating)**



[Condition] Room temperature: 20°C
Outdoor temperature: 7/6°C
Heating operation: High fan

15. Exploded View

CS-A281KR


48
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16. Replacement Parts List

<Model: CS-A281KR>

NO	DESCRIPTION & NAME	QTY	CS-280KR	REMARKS
1	CHASSIS COMPLETE	1	CWD5239970C	●
2	FAN MOTOR	1	CWA4301370	■ ●
3	CROSS FLOW FAN COMPLETE	1	CWD5707210C	●
4	BEARING ASS’Y	1	CWH4059660K	●
5	SCREW (CROSS FLOW FAN)	1	CWH4582660	●
6	EVAPORATOR	1	CWB6305560	●
7	FLARE NUT (1/4”)	1	CWT6002240	●
8	FLARE NUT (5/8”)	1	CWT6002270	●
9	SENSOR HOLDER	1	CWH5040130	●
10	BAND (EVAPORATOR - TUBE ASS’Y COMPLETE)	1	CWH4620170	●
11	DISCHARGE GRILLE COMPLETE	1	CWD5011920C	●
12	FULCRUM	3	CWH4525110	●
13	MOTOR - AIR SWING	1	CWA4107010	■ ●
14	VANE AIR DEFLECTOR ASS’Y	1	CWH5050870K	●
15	DRAIN HOSE	1	CWH5881720	●
16	TAP - DRAIN TRAY	1	CWH4639770	●
17	CONTROL BOARD ASS’Y	1	CWH4719220K	●
18	PARTICULAR PLATE	1	CWH4945600	■ ●
19	TRANSFORMER	1	CWA4017690	■ ●
20	CIRCUIT ASS’Y (OPERATION BUTTON COMPLETE)	1	CWA3919420(D)K	■ ●
21	CIRCUIT ASS’Y (RECEIVER COMPLETE)	1	CWA3919420(C)K	■ ●
22	CIRCUIT ASS’Y (DISPLAY COMPLETE)	1	CWA3919420(B)K	■ ●
23	CIRCUIT ASS’Y (ELECTRONIC CONTROLLER)	1	CWA3919420(A)K	■ ●
24	TERMINAL BOARD ASS’Y	1	CWA4706600K	■ ●
25	SCREW	1	XTT4+14C	●
26	POWER SUPPLY COMPLETE	1	CWA4102330C	●
27	TERMINAL BOARD COMPLETE	1	CWA4706620C	●
28	SENSOR COMPLETE	1	CWA3900230C	■ ●
29	CONTROL BOARD TOP COVER	1	CWH4945590	●
30	HOLDER - P.S. CORD	1	CWH4627040	●
31	FRONT GRILLE COMPLETE	1	CWE5053360C	■ ●
32	INTAKE GRILLE COMPLETE	1	CWE5010960C	●
33	DOOR	1	CWE5002270	●
34	DECORATING PLATE COMPLETE	1	CWE5027410C	●
35	AIR PURIFYING FILTER	2	CZ-SFD30N	■ ●
36	AIR PURIFYING FILTER (FRAME)	2	CWDPRT-90026-1	●
37	AIR FILTER (LEFT)	1	CWD4209180	■ ●
38	AIR FILTER (RIGHT)	1	CWD4209180	■ ●
39	SCREW - FRONT GRILLE	4	XTT4+16C	●
40	CAP (FRONT GRILLE COMPLETE)	4	CWH5060060	●
41	PARTICULAR PLATE	1	CWH4945610	●
42	RAIN COVER (HOLDER - EVAPORATOR TUBE ASS’Y	1	CWH4631410	●
43	BAG COMPLETE (AIR PURIFYING FILTER)	1	CWE4649570C	●
44	REMOTE CONTROL COMPLETE ASS’Y	1	CWA75C556	■ ▲
45	INSTALLATION PLATE	1	CWH8010540	●

NO	DESCRIPTION & NAME	QTY	CS-280KR	REMARKS
46	OPERATING INSTRUCTIONS	1	CWF8036900	●
47	INSTALLATION INSTRUCTIONS	1	CWF8039140	●
48	BAG COMPLETE - INSTALLATION SCREW	1	CWH4649210	●
49	SCREW	1	XTT4+12C	●
50	SCREW	1	XTT4+16C	●
51	SCREW	1	XTN4+8C	●
52	SCREW	1	XTT4+10C	●
53	SCREW	1	XTT4+8C	●
54	REMOTE CONTROL UPPER CASE	1	CWE15C241	▲
55	CONTROL PANEL	1	CWE311064	▲
56	KNOB	1	CWE17196A	▲
57	KNOB	1	CWE17197A	▲
58	CONTACTOR	1	CWA65036C	▲
59	ELECTRONIC CONTROLLER	1	CWA74224	▲
60	INDICATOR	1	CWE39199	▲
61	REMOTE CONTROL LOWER CASE	1	CWE15128A	▲
62	COVER	1	CWB80040A	▲
63	CAP (BUTTON)	1	CWE5060120	■ ▲
64	FUSE COMPLETE	1	CWA4023070C	■ ▲

(Note)

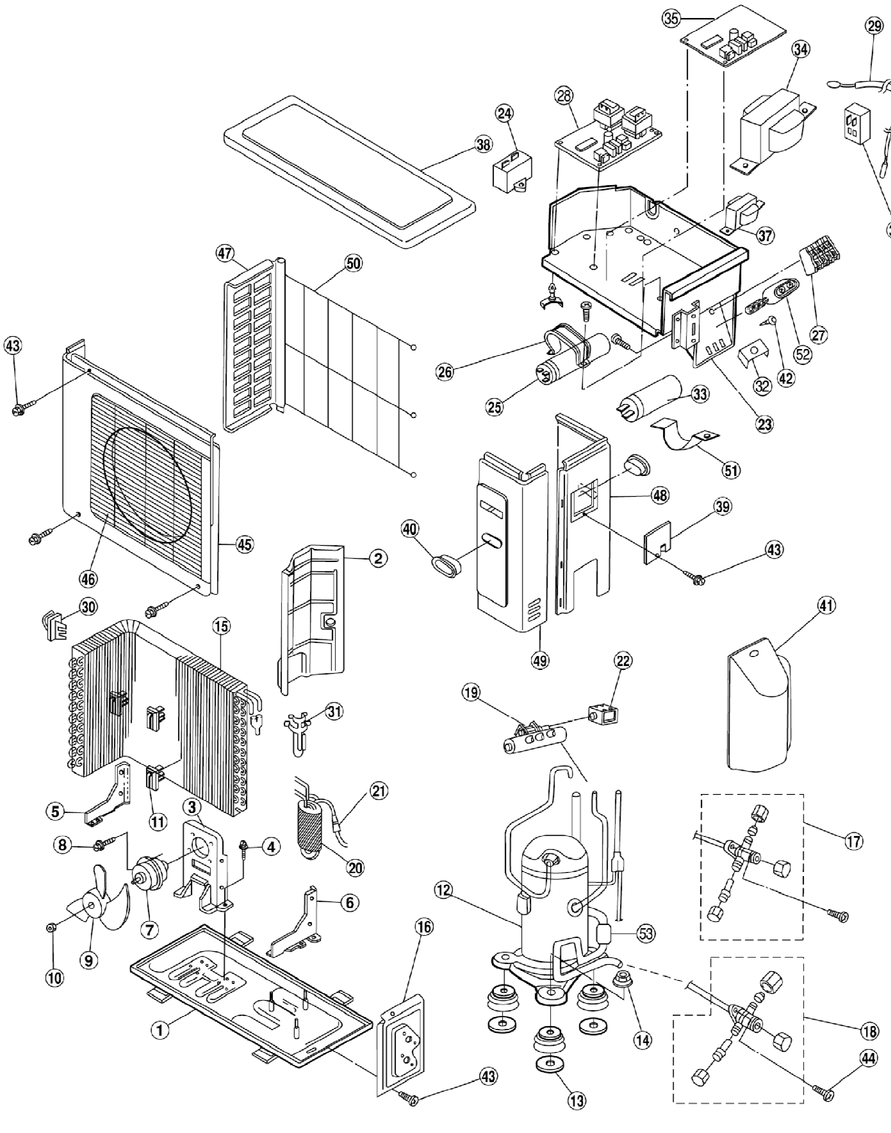
- “ ■ ” marked parts are recommended to be kept in stock.

- “ ● ” marked parts are supplied from TAMACO, Taiwan.

- “ ▲ ” marked parts are supplied from MACC, Malaysia.

17. Exploded View

CU-A281KR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18. Replacement Parts List

<Model: CU-A281KR>

NO	DESCRIPTION & NAME	QTY	CS-280KR	REMARKS
1	CHASSIS ASS'Y	1	CWH5244200AKA	●
2	SOUND PROOF	1	CWH5236060	●
3	FAN MOTOR BRACKET	1	CWH5241830	●
4	SCREW - (FAN MOTOR BRACKET)	6	XTT4D10CXW	●
5	PARTICULAR PLATE - LEFT (HOLD - FAN MOTOR)	1	CWH4934850	●
6	PARTICULAR PLATE - RIGHT (HOLD - FAN MOTOR)	1	CWH4934860	●
7	FAN MOTOR	1	CWA4301380	■ ●
8	SCREW - FAN MOTOR	3	XTT4D10CXW	●
9	PROPELLER FAN ASS'Y	1	CWH00K050	▲
10	NUT - PROPELLER FAN	1	CWH4583020	●
11	HOLDER - FOR F/MOTOR & LEAD WIRES	3	CWH4620110	●
12	COMPRESSOR ASS'Y	1	CWB6815280K	■ ●
13	PACKING - COMP. MOUNT	3	CWH4604010	●
14	NUT - COMP. MOUNT	3	CWH4521130	●
15	CONDENSER	1	CWB6305570	●
16	HOLDER - COUPLING ASS'Y	1	CWH5240070AKA	●
17	3-WAYS VALVE (LIQUID)	1	CWB4034150	■ ●
18	3-WAYS VALVE (GAS)	1	CWB4034170	■ ●
19	4-WAYS VALVE ASS'Y	1	CWB4034590K	■ ●
20	TUBE ASS'Y (CAPILLARY TUBE. CHECK VALVE)	1	CWB5932090	●
21	STRAINER	1	CWB4042340	●
22	V-COIL COMPLETE	1	CWA4019380C	■ ●
23	CONTROL BOARD ASS'Y	1	CWH4712690	●
24	CAPACITOR - FAN MOTOR	1	CWA4069960	■ ●
25	CAPACITOR - COMPRESSOR	1	CWA4069780	■ ●
26	HOLDER - CAPACITOR	1	CWH4828750	●
27	TERMINAL BOARD ASS'Y	1	CWA4706590	■ ●
28	ELECTRONIC CONTROLLER	1	CWA741315	■ ▲
29	SENSOR COMPLETE	1	CWA50C622	■ ▲
30	HOLDER - SENSOR	1	CWH32089	●
31	HOLDER - SENSOR (FOR TUBE)	1	CWH5040120	●
32	U METAL PIECE	1	CWE4825120	■ ●
33	CAPACITOR - COMPRESSOR START	1	CWA4069970	■ ●
34	INDUCTOR	1	CWA3915030	●
35	SOFT START ELECTRONIC CONTROLLER	1	CWA3919400	●
36	TERMINAL BOARD ASS'Y	1	CWA4706610K	●
37	TRANSFORMER	1	CWA4017740	●
38	CABINET TOP PLATE ASS'Y	1	CWE5030520AKA	●
39	CONTROL BOARD COVER	1	CWE4936960A	●
40	HANDLE	2	CWE4520120	●
41	RAIN COVER	1	CWE4631880	●
42	SCREW	1	XSD4+6BNS	●
43	SCREW	20	CWE4585520	●
44	SCREW	4	CWE4580930	●

NO	DESCRIPTION & NAME	QTY	CS-280KR	REMARKS
45	CABINET FRONT PLATE ASS'Y COMPLETE	1	CWE5030940ACA	●
46	WIRE NET	1	CWE4537630	●
47	CABINET SIDE PLATE (LEFT)	1	CWE5030720A	●
48	CABINET REAR PLATE COMPLETE	1	CWE5030820ACA	●
49	CABINET FRONT PLATE ASS'Y	1	CWE5030640K	●
50	WIRE NET (REAR)	1	CWE4537530A	●
51	HOLDER - CAPACITOR	1	CWH4828800	●
52	HOLDER - PS,CORD	1	CWH4627100	●
53	MUFFLER	1	CWB6040210	●

(Note)

- " ■ " marked parts are recommended to be kept in stock.

- " ● " marked parts are supplied from TAMACO, Taiwan.

- " ▲ " marked parts are supplied from MACC, Malaysia.

19. Electronic Parts List

Electronic Controller: C3919-420A (CS-A281KR)

SYMBOL	DESCRIPTION & NAME	PART NO.
IC1	INTEGRATED CIRCUIT	C4083-910
IC2	INTEGRATED CIRCUIT	C4083-450
IC3	INTEGRATED CIRCUIT	C4083-860
IC4	INTEGRATED CIRCUIT	C4083-730
IC5	INTEGRATED CIRCUIT	C4083-720
PC1	PHOTO COUPLER	C4094-040
Q1	TRANSISTOR	C4086-060T
Q2	TRANSISTOR	C4086-240T
Q3, Q5	TRANSISTOR	J4086-080T
D1 ~ D4	DIODE	E4060-020T
ZD1	ZENER DIODE	C4082-100T
ZNR1, ZNR2, ZNR3	ZNR	C4084-150
RY-HOT	RELAY ELECTRO MAGNETIC	C4104-180
RY-HI, ME, LO	RELAY ELECTRO MAGNETIC	C4104-170
RY-COMP	RELAY ELECTRO MAGNETIC	C4076-310
SSR1	SSR	C4092-060
SW1, SW2	PUSH SWITCH	C4001-200
FUSE	FUSE	XBA2C31TR0
X1	RESONATOR	F4090-010T
BZ	BUZZER (SOUND GENERATOR)	C4091-030
Q6~ Q8	TRANSISTOR	C4086-250T

Note

- All parts are supplied from TAMACO, Taiwan.

Electronic Controller: CWA741315 (CU-A281KR)

SYMBOL	DESCRIPTION & NAME	PART NO.
IC1	INTEGRATED CIRCUIT	A52C78414Y
IC2	INTEGRATED CIRCUIT	A52C094
IC3	INTEGRATED CIRCUIT	A52C040
IC4	INTEGRATED CIRCUIT	A52MPA2003C
Q1	TRANSISTOR	A55C1740STPQ
Q2	TRANSISTOR	A55DTC113ZST
D1 ~ D6	DIODE	A54MA165TA5
DB1, DB2	DIODE BRIDGE	A54CS1VB20E
ZD1	ZENER DIODE	A54D7.5EL1TB
ZNR2 ~ ZNR4	ZNR	A54C353
T1, T2	TRANSFORMER	A40378
CR1	SURGE ABSORBER	A59014
CR2	SURGE ABSORBER	A59014
RY-HOT	RELAY	A00160
RY-DEICE	RELAY	A00160
RY-OFF	RELAY	A00160
RY-H/L	RELAY	A00160
RY-V	RELAY	A00160
FUSE	FUSE	XBA2C31TR0
X1	RESONATOR	A45ST4.0MGWT

Note

- All parts are supplied from MACC, Malaysia (Vendor Code: 086).

Electronic Controller: C3919-400 (CU-A281KR)

SYMBOL	DESCRIPTION & NAME	PART NO.
IC1, IC2	INTEGRATED CIRCUIT	J4083-070
Q1, Q2	TRANSISTOR	C4086-250T
D1 ~ D5, D7	DIODE	E4060-020T
RY-C, RY-L	RELAY ELECTRO MAGNETIC	C4104-090
Q3	TRANSISTOR	J4086-080T

Note

- All parts are supplied from TAMACO, Taiwan.

20. Electronic Circuit Diagram

Fig. 1

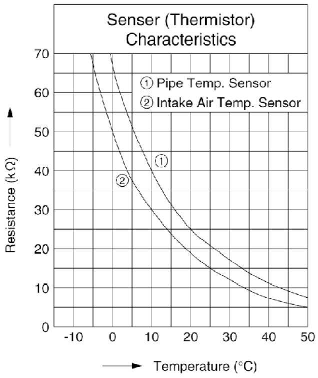


Fig. 2

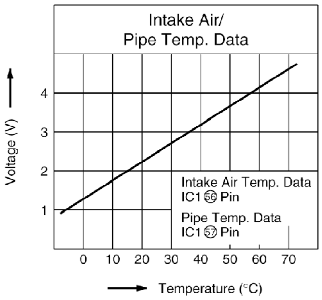


Fig. 3

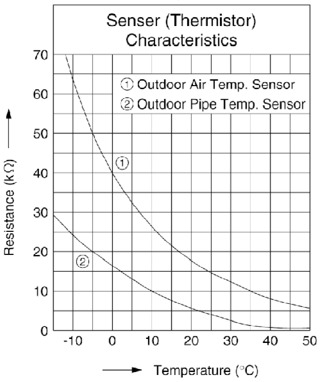


Fig. 4

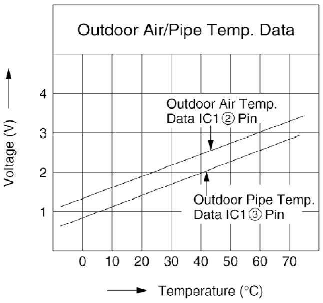


Fig. 5

OUTDOOR TEMP.	RISES		FALLS	
COOLING	OVER 29°C	Hi	OVER 31°C	Hi
SOFT DRY	BELOW 29°C	Lo	BELOW 31°C	Lo
HEATING	BELOW 15.5°C	Hi	BELOW 13.5°C	Hi
	OVER 15.5°C	Lo	OVER 13.5°C	Lo

How to use electronic circuit diagram

Before using the circuit diagram, read the following carefully.

* Voltage measurement
Voltage has been measured with a digital tester when the indoor fan is set at high fan speed under the following conditions without setting the timer.
Use them for servicing.
Voltage indication is in Red at all operations.

	Intake air temperature	Temperature setting	Discharge air temperature	Pipe temperature
Cooling	27°C	16°C	17°C	15°C
Heating	20°C	30°C	40°C	50°C

* Indications for resistance
a. K....kΩ M....MΩ
W...watt Not indicated....1/4W
b. Type
Not indicated..........carbon resister
Tolerance±5%
..........metal oxide resister
Tolerance±1%

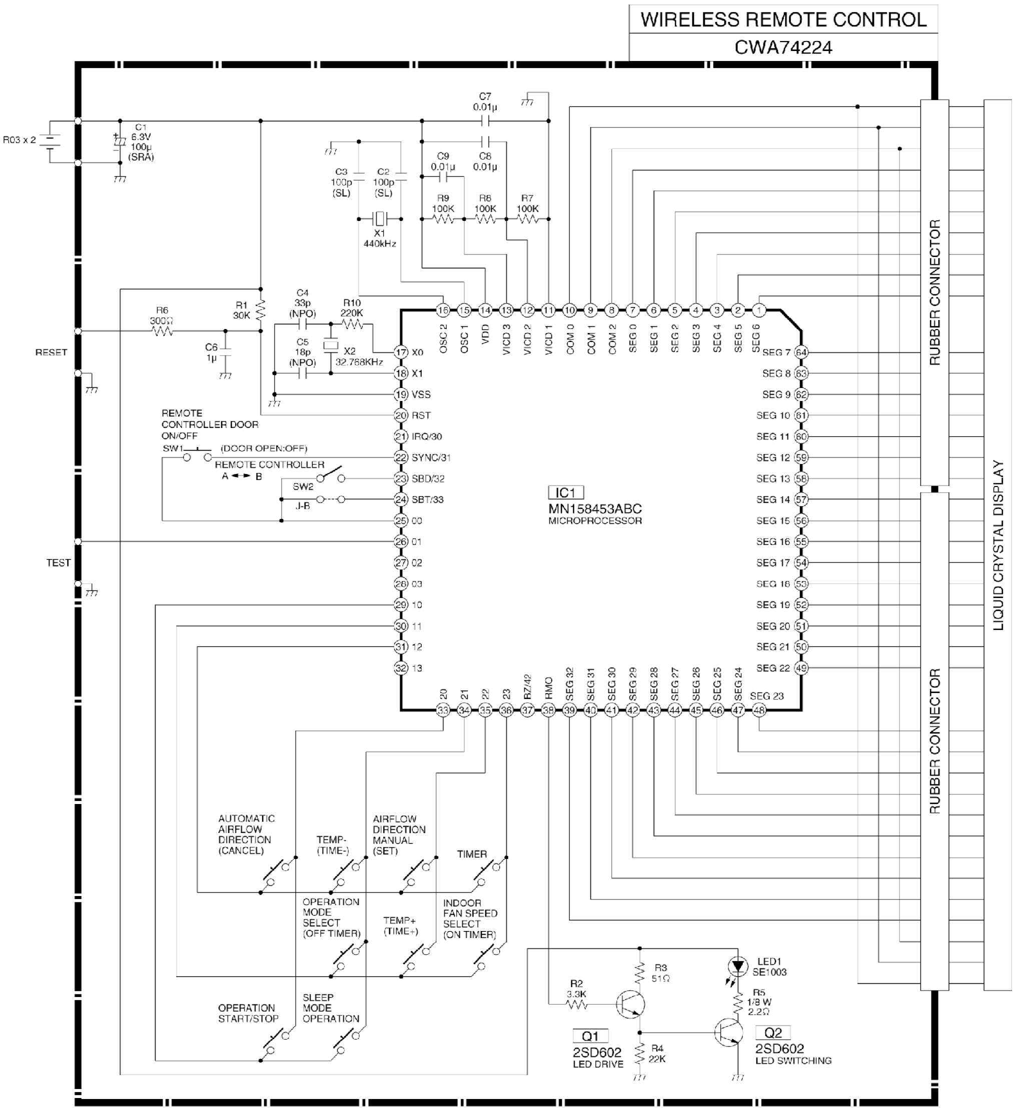
* Indications for capacitor
a. Unit μ....μF P....pF
b. Type Not indicated....ceramic capacitor
(S)...........S series aluminium electrolytic capacitor
(Z)...........Z series aluminium electrolytic capacitor
(SU)........SU series aluminium electrolytic capacitor
(P)...........P series polyester system
(SXE)......SXE series aluminium electrolytic capacitor
(SRA)......SRA series aluminium electrolytic capacitor
(KME)......KME series aluminium electrolytic capacitor

* Diode without indication.............MA165
※ Circuit Diagram is subject to change without notice for further development.

TIMER TABLE

Name		Time	Test mode (When test point Short-circuited)	Remarks
Sleep Mode Waiting		1 hr.	6 sec.	
Sleep Mode Operation		8 hrs.	48 sec.	
Real Timer		1 hr.	1 min.	
		10 min.	10 sec.	
		1 min.	1 sec.	
Time Delay Safety Control		2 min. 58 sec.	0 sec.	
Forced Operation		60 sec.	0 sec.	
Time Save Control		7 min.	42 sec.	
Anti-Freezing Control		4 min.	0 sec.	
Mode Judgement		20 sec.	0 sec.	
Soft Dry	Off	6 min.	36 sec.	
	On	10 min.	60 sec.	SOFT DRY: 10 min. operation
Deodorizing Control	Cooling	40 sec.	4 sec.	Comp. ON
		70 sec.	7 sec.	Comp. ON
		20 sec.	2 sec.	Comp. OFF
		180 sec.	18 sec.	Comp. OFF
	Soft Dry	40 sec.	4 sec.	Comp. ON
		360 sec.	36 sec.	Comp. OFF
Indoor Fan Step Change		1 sec.	0 sec.	
After Deice Ended		30 sec.	3 sec.	Comp. OFF, F/Motor ON
4-Way valve		5 min.	30 sec.	

20.1. REMOTE CONTROL


WIRELESS REMOTE CONTROL
CWA74224
R03 x 2
C1 6.3V 100μ (SRA)
C7 0.01μ
C8 0.01μ
C9 0.01μ
C3 100p (SL)
C2 100p (SL)
X1 440kHz
R9 100K
R8 100K
R7 100K
R6 300Ω
R1 30K
C4 33p (NPO)
R10 220K
C5 18p (NPO)
X2 32.768KHz
C6 1μ
RESET
TEST
REMOTE CONTROLLER DOOR ON/OFF
SW1
(DOOR OPEN:OFF)
REMOTE CONTROLLER A ◄─► B
SW2
J-B
IC1
MN158453ABC
MICROPROCESSOR
OSC 2
OSC 1
VDD
VICD 3
VICD 2
VICD 1
COM 0
COM 1
COM 2
SEG 0
SEG 1
SEG 2
SEG 3
SEG 4
SEG 5
SEG 6
X0
X1
VSS
RST
IRQ/30
SYNC/31
SBD/32
SBT/33
00
01
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03
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BZ/42
RMO
SEG 32
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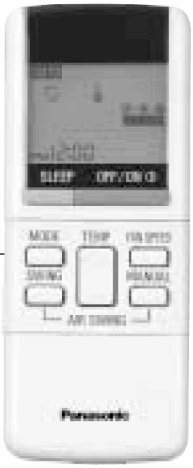
SEG 21
SEG 22
RUBBER CONNECTOR
RUBBER CONNECTOR
LIQUID CRYSTAL DISPLAY
AUTOMATIC AIRFLOW DIRECTION (CANCEL)
TEMP- (TIME-)
AIRFLOW DIRECTION MANUAL (SET)
TIMER
OPERATION MODE SELECT (OFF TIMER)
TEMP+ (TIME+)
INDOOR FAN SPEED SELECT (ON TIMER)
OPERATION START/STOP
SLEEP MODE OPERATION
R3 51Ω
LED1 SE1003
R5 1/8 W 2.2Ω
R2 3.3K
Q1
2SD602
LED DRIVE
R4 22K
Q2
2SD602
LED SWITCHING

REMOTE CONTROL NO.	SW2		J-B	REMARKS
	A	B		
0	○	–	–	AT DELIVERY
1	–	○	–	
2	○	–	○	
3	–	○	○	

J-B: THE O MARK INDICATES "JUMPER WIRE"

[MACC] Printed in Malaysia

Remote Control



OFF / ON ⏀

Operation OFF / ON

MODE

Operation Mode Selection

AUTO	Automatic Operation Mode
HEAT	Heating Operation Mode
COOL	Cooling Operation Mode
DRY	Soft Dry Operation Mode

FAN SPEED

Indoor Fan Speed Selection

✇ ✇ ✇ ▮	Low Speed
✇ ✇ ✇ ▮▮▮	Medium Speed
✇ ✇ ✇ ▮▮▮▮▮	High Speed
AUTOFAN	Automatic Fan Speed

AIR SWING

Airflow Direction Control

SWING	Automatic Airflow Direction Control
MANUAL	Airflow Direction Manual Control

TEMP.

Room Temperature Setting

- Temperature Setting (16˚C to 30˚C)
- Automatic Operation

🌡 ◄ 🌡	2˚C lower than standard
🌡	Standard
🌡 ► 🌡	2˚C higher than standard

ON-TIMER
OFF-TIMER

Timer Operation Selection

- 24-hour, OFF / ON Real Timer Setting.

TIME

Time / Timer Setting

- Hours and minutes setting.

SET
CANCEL

Timer Operation Set / Cancel

- ON Timer and OFF Timer setting and cancellation.

CLOCK
(時計)

Clock Setting

- Current time setting.

SLEEP

Sleep Mode Operation OFF / ON

Indoor Unit

AUTO
OFF / ON

Auto Operation Switch

- Used when the remote control cannot be used.

Remote Control Signal Receiving Sound Control

- It can be controlled by pressing Auto Operation Switch for 10 seconds.

TEST RUN
OFF / ON

Operation Test Running / Pump Down Switch

- Used when test running or servicing.

Operation Indication Lamps (LED)

- POWER (Red)........ Lights up in operation, blinks in Automatic Operation Mode judging and Hot Start operation.
- SLEEP (Orange).... Lights up in Sleep Mode Operation.
- TIMER (Orange).... Lights up in Timer Setting.

Operation Mode

- Heating, Cooling, Soft Dry, and Automatic Mode.

Time Delay Safety Control

- Restarting is inhibited for appro. 3 minutes.

7 Minutes Time Save Control

- Cooling Operation only.

Auto Restart Control

- Operation is restarted after power failure at previous setting mode.

Anti-Freezing Control

- Anti-Freezing control for indoor heat exchanger. (Cooling and Soft Dry)

Sleep Mode Auto Control

- Indoor Fan operates at Low fan speed.
- Operation stops after 8 hours.

Indoor Fan Speed Control

- High, Medium and Low.
- Automatic Fan Speed Mode
  - Heating : Fan speed varies from Hi → SLo in accordance with indoor heat exchanger.
  - Cooling : Fan rotates at Hi and Me speed. Deodorizing control is available.
  - Soft Dry: Fan rotates at Lo speed.

Airflow Direction Control

- Automatic air swing and manual adjusted by remote control for vertical airflow.
- Manually adjusted by hand for horizontal airflow.

Hot-Start Control

- The indoor fan stops until the indoor heat exchanger temperature over 30°C.
- The indoor fan operates at SLo and Lo when indoor heat exchanger temperature reaches 30°C ~ 42°C.
- Hot start is completed when indoor heat exchanger reaches 42°C.

Outdoor Unit

4-Way Valve Control

- When the unit is switched to “OFF” during Heating operation, 4-way valve stays at Heating Position for 5 minutes.

Overload Protector

- Inner protector (Compressor, Fan Motor).

60 Secs. Forced Operation Control

- Once the compressor is activated, it does not stop for 60 secs. (Stops immediately with remote control stop signal.)

Outdoor Fan Operation Control

- 4-pole induction motor (2-speed)
- For Cooling or Soft Dry Operation
  Hi-speed … when outdoor temperature reaches to 31°C
  Lo-speed … when outdoor temperature reaches to 29°C
- For Heating Operation
  Hi-speed ... when outdoor temperature reaches to 13.5°C.
  Lo-speed ... when outdoor temperature reaches to 15.5°C.
- For Over-heating Protection, the Fan is switched ON or OFF depending on the piping temperature and the outdoor temperature.

Deice Control

- To prevent frosting at outdoor heat exchanger during Heating Operation.

Soft Start

- When the unit is started the starting current will be below 45A.

Safety Precautions

Before operating, please read the following “Safety Precautions” carefully.

To prevent personal injury, injury to others and property damage, the following instructions must be followed.

- Incorrect operation due to ignoring of instructions will cause harm or damage, the seriousness of which is classified as follows:

⚠	**Warning:**	This sign warns of death or serious injury.
⚠	**Caution :**	This sign warns of injury or damage to property only.

- The instructions to be followed are classified by the following symbols:

🚫	This symbol (with a white background) denotes an action that is PROHIBITED.
	These symbols (with a black background) denote an action that is COMPULSORY.

Installation precautions

⚠ Warning

- **Do not install, remove and reinstall the unit yourself.**
  Improper installation will cause leakage, electric shock or fire. Please consult an authorized dealer or specialist for the installation work.

⚠ Caution

- **This room air conditioner must be earthed.**
  ❗ Improper grounding could cause electric shock.

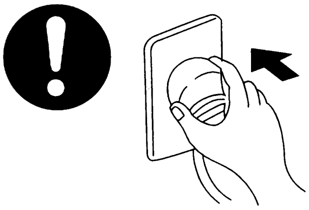
- **Do not install the unit in a place where there may be explosive gas leaks.**
  🚫 Gas leaks near the unit could cause fires.

- **Ensure that drainage piping is connected properly.**
  ❗ Otherwise, water will leak out.

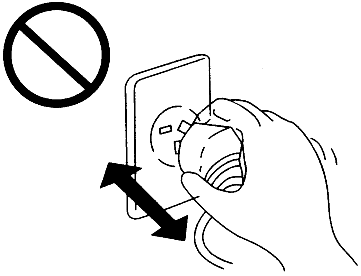
Operation precautions

Warning

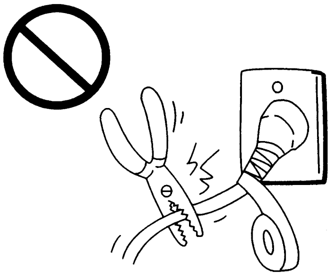
- **Insert the power plug properly.** Heat generated by a loose power plug could cause electric shock or fire. Electrical outlet and power plug shall be easilly accessible.



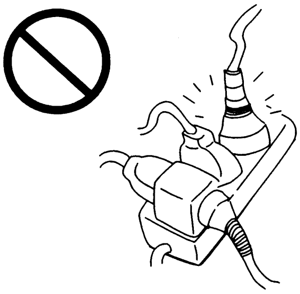
- **Do not operate or stop the unit by inserting or pulling out the power plug.** It could cause electric shock or fire.



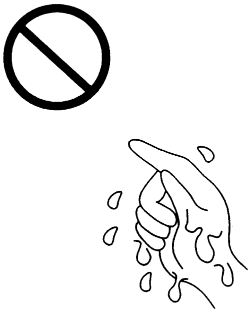
- **Do not damage or use an unspecified power cord.** It will cause electrical shock or fire.



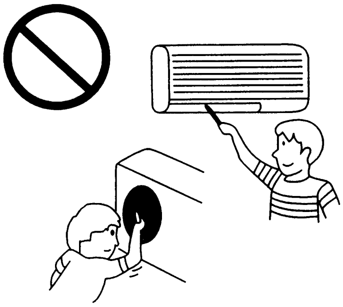
- **Do not modify the length of the power cord or use an extension cord.** It could cause electric shock or fire.



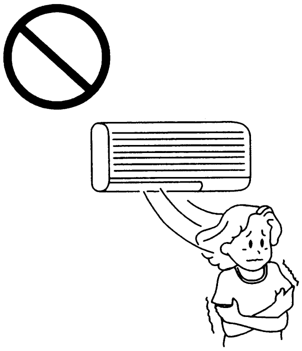
- **Do not operate the unit with wet hands.** It could cause an electric shock.



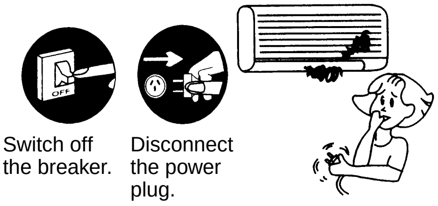
- **Do not insert finger, sticks or other objects into the units.** It could lead to physical injury and cause damage to the units.



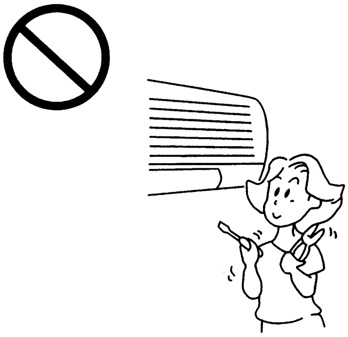
- **Do not be directly exposed to the cold airstream for too long.** It could lead to health problems.



- **If there is a smell of burning, stop the air conditioner and disconnect the power supply.** The heat generated could cause electric shock or fire. Please consult an authorized dealer or service centre.

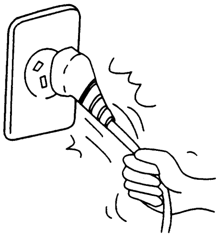

OFF
Switch off the breaker.
Disconnect the power plug.

- **Do not try to repair the unit yourself.** It could lead to fire or cause an electric shock. Please call an authorized dealer or service centre.

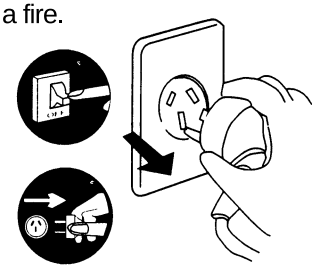


Caution

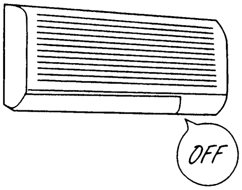
■ **Do not remove the power plug by pulling the cord.**
Hold the plug when disconnecting the plug from the wall outlet.



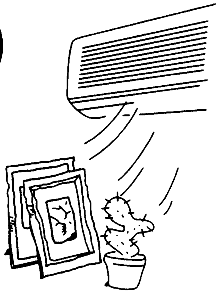
■ **Switch off the power supply if the unit is not going to be used for a long period of time.**
If dust accumulates on the plug, it will generate heat and this could cause a fire.


Switch off the breaker.
Disconnect the power plug.

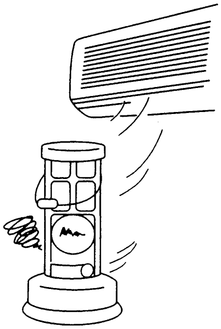
■ **When cleaning the unit, remove the plug.**
This is to prevent injury due to the rotating fan in the unit.



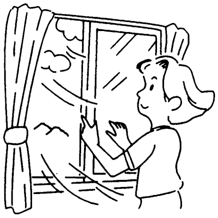
■ **Do not use for other purposes.**
Do not use for preservation purposes. It will affect food quality, animals or plants.



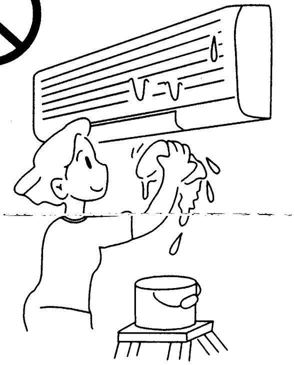
■ **Do not place combustor in the path of the airflow from the unit.**
Incomplete combustion could cause toxic gas (CO) poisoning.



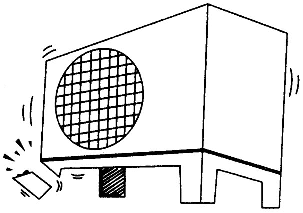
■ **Ventilate the room regularly.**
If not ventilated regularly, the lack of oxygen could cause headaches.



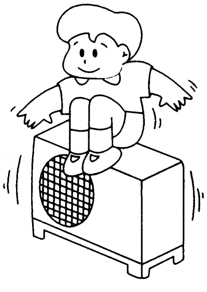
■ **Do not wash the unit with water.**
It could cause an electric shock.



■ **Inspect the unit for any damage.**
Ensure that the necessary repairs are carried out.

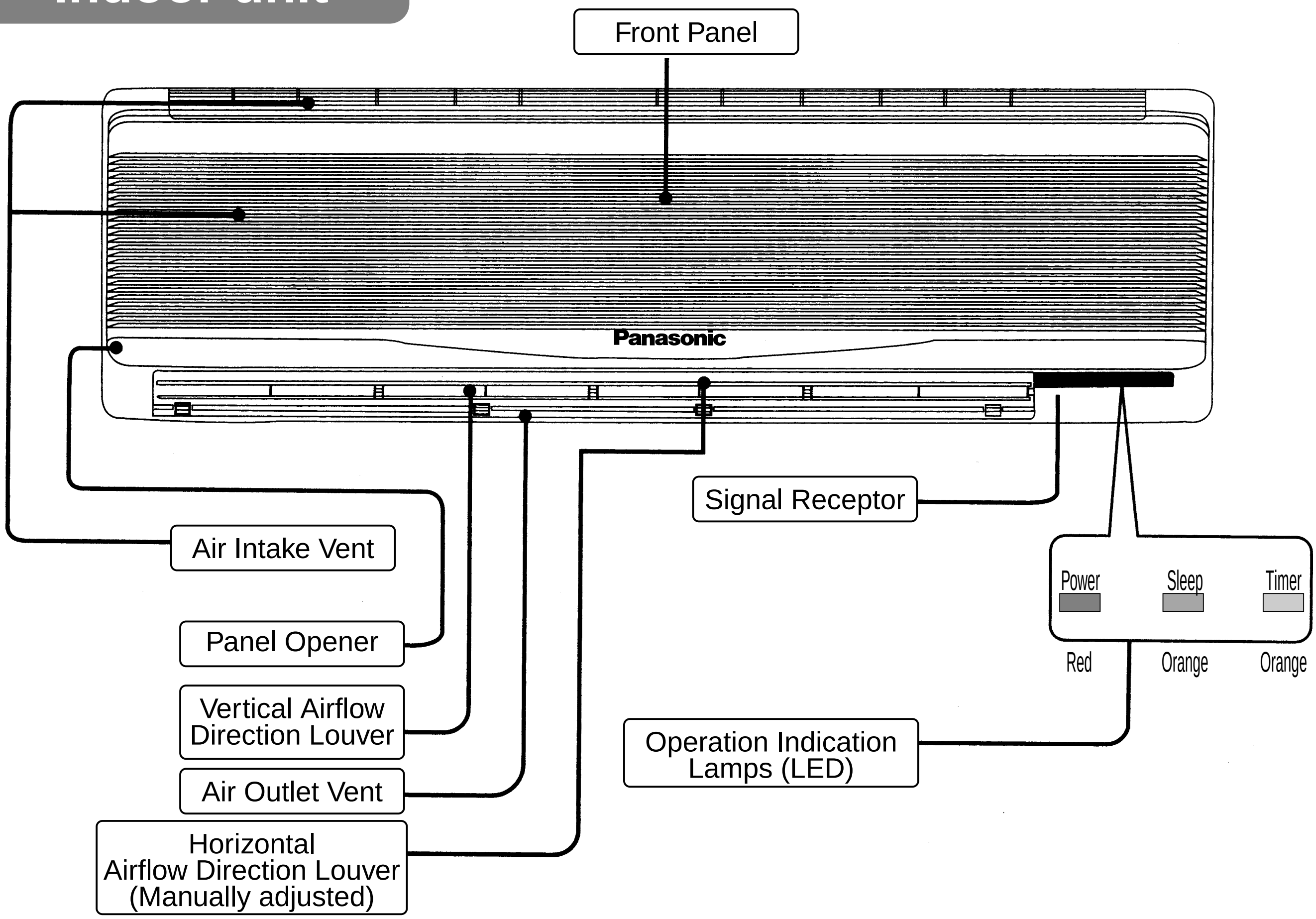


■ **Do not sit or place anything on the outdoor unit.**
You might fall off or the unit might collapse.

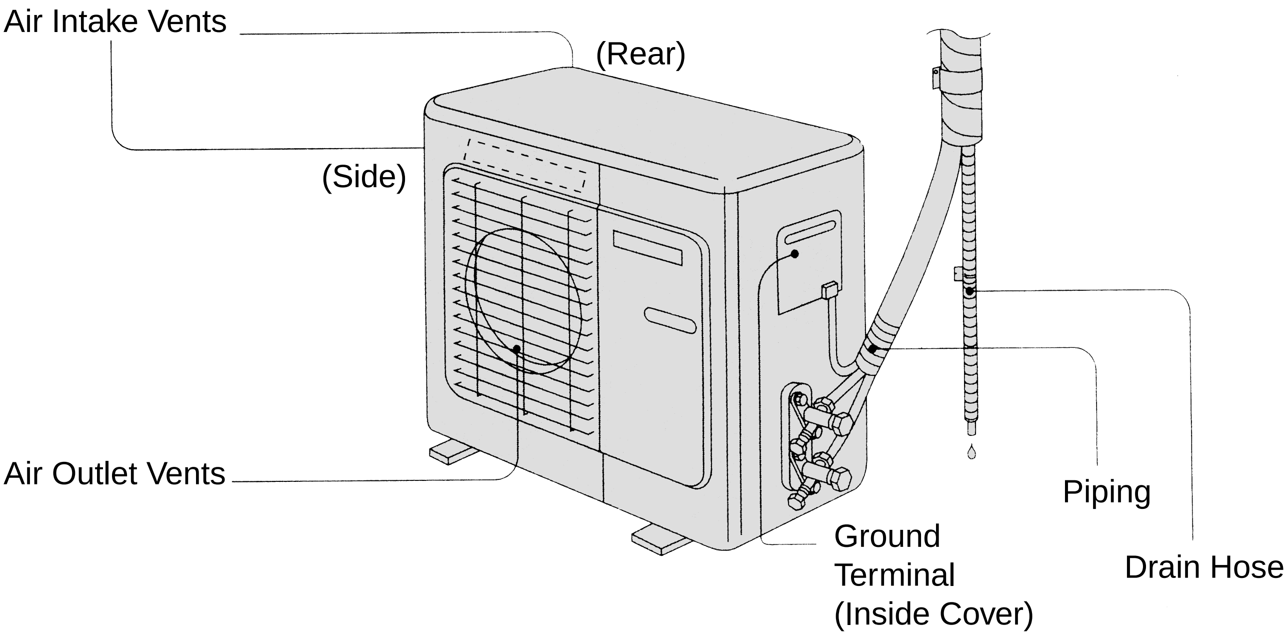


Name of Each Part

Indoor unit

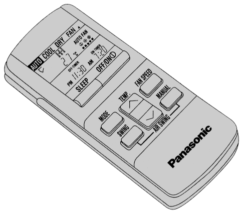

Front Panel
Panasonic
Signal Receptor
Air Intake Vent
Power
Sleep
Timer
Red
Orange
Orange
Panel Opener
Vertical Airflow Direction Louver
Operation Indication Lamps (LED)
Air Outlet Vent
Horizontal Airflow Direction Louver (Manually adjusted)

Outdoor unit

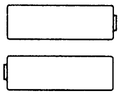

Air Intake Vents
(Rear)
(Side)
Air Outlet Vents
Piping
Ground Terminal (Inside Cover)
Drain Hose

Accessories

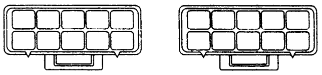
Remote Control



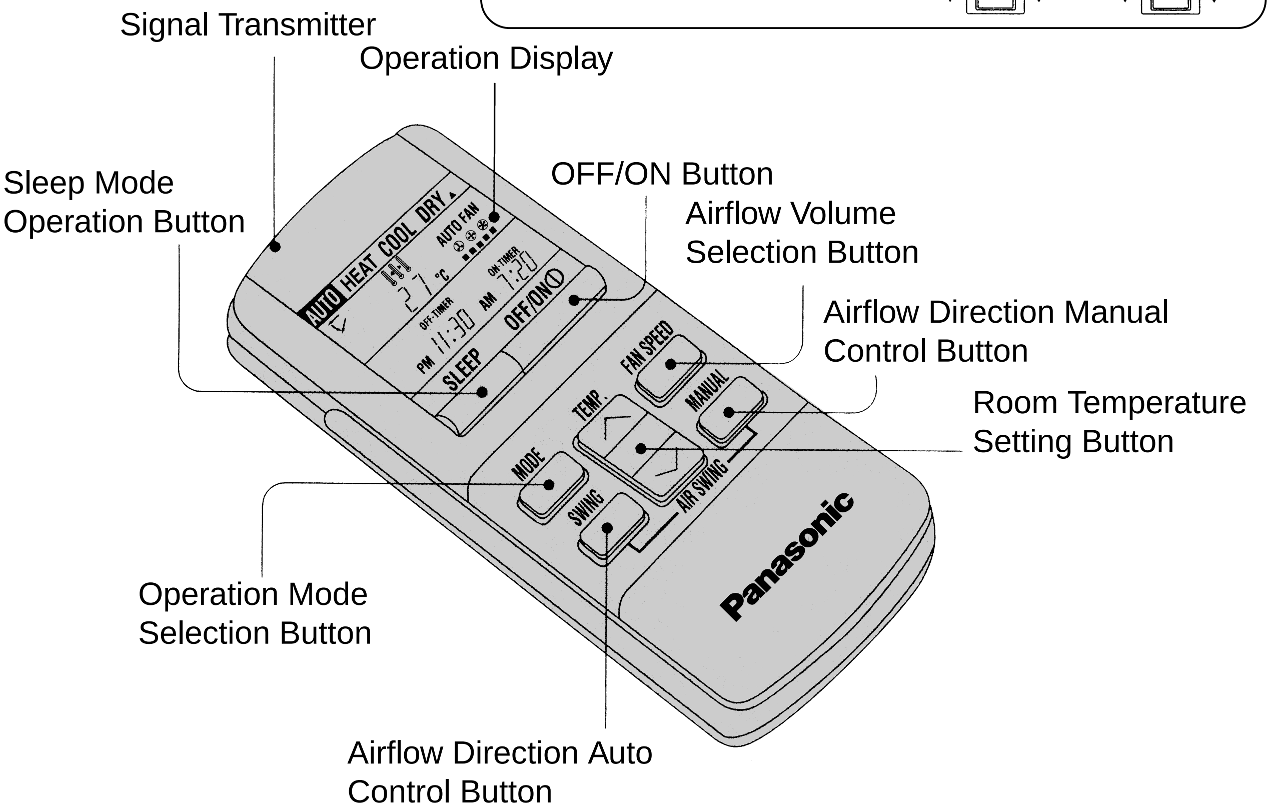
Two R03 dry-cell batteries or equivalent



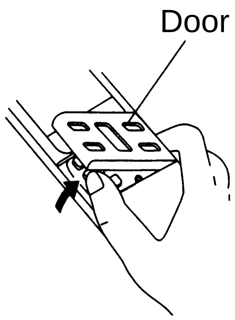
Air Purifying Filters

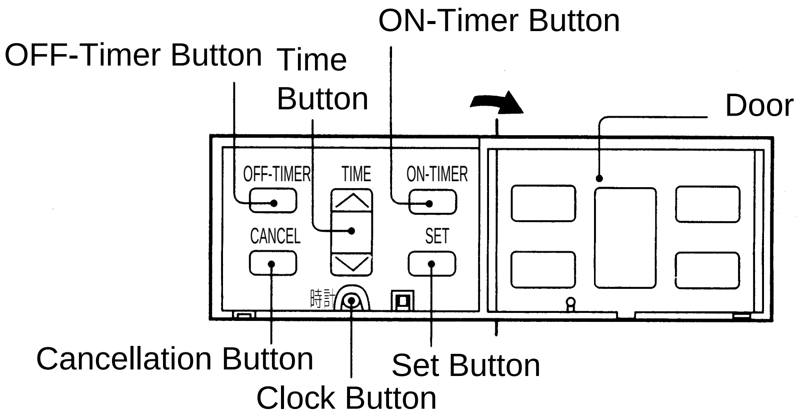


Remote control


Signal Transmitter
Operation Display
Sleep Mode Operation Button
OFF/ON Button
Airflow Volume Selection Button
Airflow Direction Manual Control Button
Room Temperature Setting Button
Operation Mode Selection Button
Airflow Direction Auto Control Button
AUTO HEAT COOL DRY
AUTO FAN
°C
OFF-TIMER
ON-TIMER
PM
AM
SLEEP
OFF/ON
FAN SPEED
TEMP.
MANUAL
MODE
SWING
AIR SWING
Panasonic

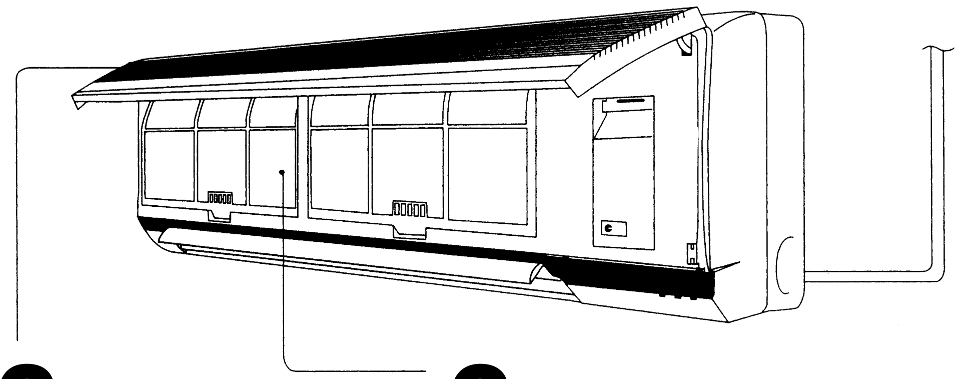
Separate displays and functions are available when the door is opened.




ON-Timer Button
OFF-Timer Button
Time Button
Door
OFF-TIMER
TIME
ON-TIMER
CANCEL
SET
時計
Cancellation Button
Set Button
Clock Button

Preparation Before Operation

Before operating the unit

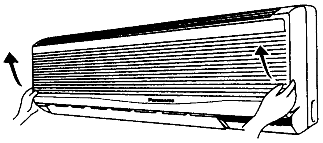


1

■ **Connect the power supply cord to an independent power supply.**

2

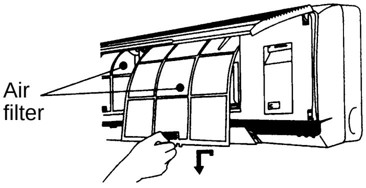
■ **Open the front panel.**



Hold the panel openers at both sides and pull up the front panel.

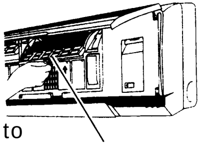
3

■ **Remove air filter.**



Hold the tab to raise up slightly and then pull down.

■ **Insert air purifying filter.
Insert the air filters.**



Be careful not to hurt your hands by metal parts.

<Note>

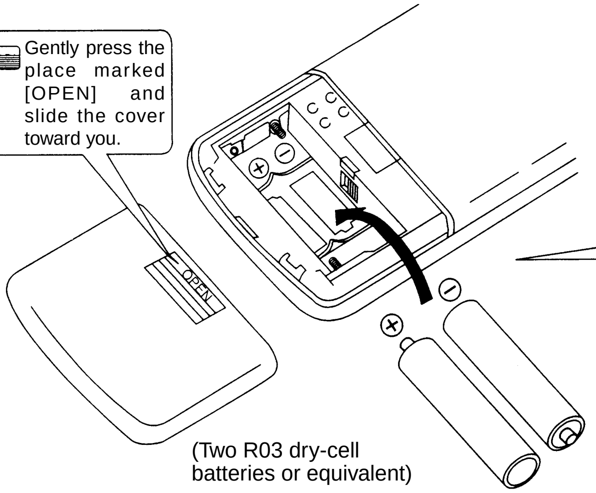
Use under the following conditions:

(Unit in ˚C)

DBT: Dry Bulb Temperature **WBT: Wet Bulb Temperature**	**Cooling**				**Heating**			
	In door		**Out door**		**Indoor**		**Out door**	
	DBT	**WBT**	**DBT**	**WBT**	**DBT**	**WBT**	**DBT**	**WBT**
Maximum Temperature	32	23	43	26	30	—	24	18
Minimum Temperature	16	11	16	11	16	—	2	1

How to insert batteries

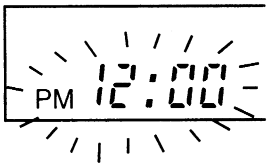
Gently press the place marked [OPEN] and slide the cover toward you.



(Two R03 dry-cell batteries or equivalent)

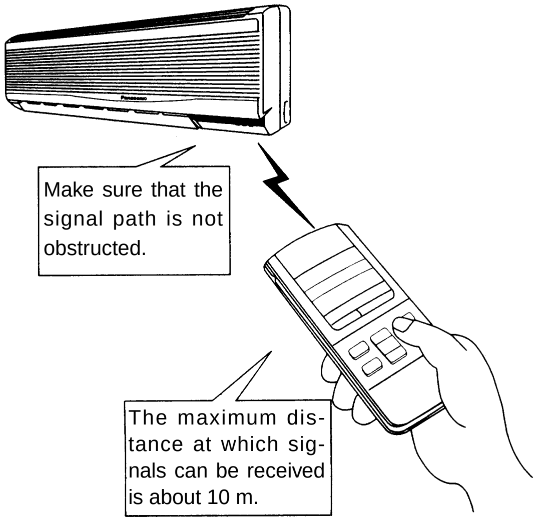
⊕⊖ Be sure that the (+) and (–) directions are correct.

- **Fix the cover to the back of the remote control ("PM 12:00" will flash in the operation display.)**



If the display does not appear when the batteries are inserted, remove the batteries and insert them once more.

Operating the remote control



Make sure that the signal path is not obstructed.

The maximum distance at which signals can be received is about 10 m.

- Aim at the signal receptor on the room air conditioner when operating.
- Do not drop or throw the remote control.
- Do not place the remote control in a location that is exposed to direct sunlight or next to a heating unit or other heat source.
- Signal received sound:
  One short beep or one long beep.

Pull out the power plug or turn off the power breaker when:

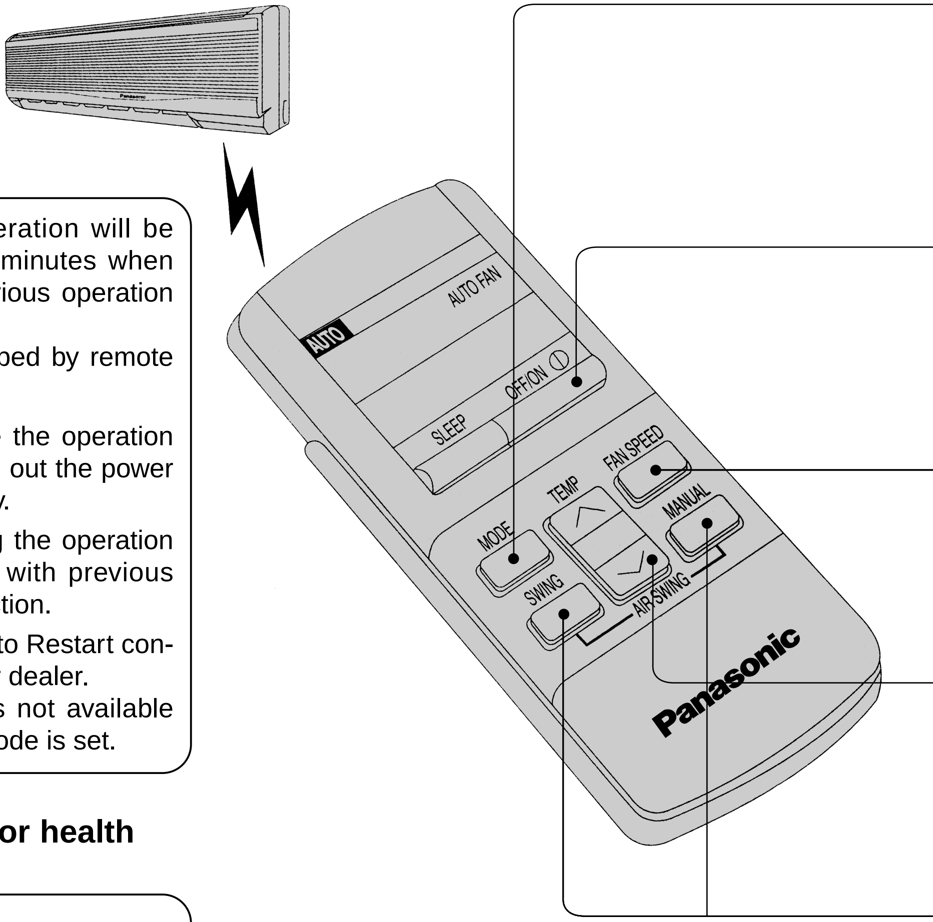
- **The air conditioner is not going to be used for an extended period of time.**
  If the power supply cord connect, approximately 3.25 watts of electric power are used even if the main unit is turned off by remote control.

- **There is a danger of lightning.**
  The air conditioner is provided with a built-in protective device, but the control equipment may be adversely affected depending on the extent of

Regarding the batteries.

- The batteries can be used for approximately one year.
- Do not use rechargeable (Ni-Cd) batteries, because such batteries differ from standard dry-cell batteries in shape, dimensions and performance.
- Be sure to replace the batteries with two new batteries of the same type.
- Do not dispose of empty batteries in household waste. Take them to special local collection sites.

How to Operate



Auto Restart Control.

- ■ If there is a power failure, operation will be automatically restarted after 3 minutes when the power is resumed with previous operation mode and airflow direction.
  (when the operation is not stopped by remote control.)
- ■ If you do not intend to continue the operation when the power is resumed, pull out the power plug at main unit or power supply.

  When you insetr the power plug the operation will be automatically restarted with previous operation mode and airflow direction.

  Note: 1. If you do not require Auto Restart control, please consult your dealer.
  2. Auto Restart Control is not available when Timer or Sleep Mode is set.

Recommended temperature for health and comfort.

For Heating	:	20℃	–	24℃
For Cooling	:	26℃	–	28℃
For Soft Dry	:	1℃	–	2℃ lower than room temperature.

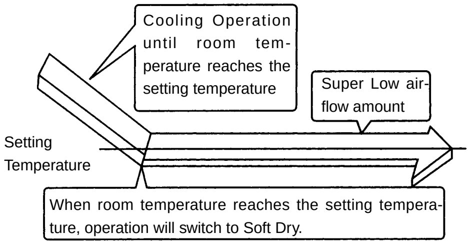
<Operation Details>

AUTO-Automatic Operation.

- ■ Once the Automatic Operation is selected, the indoor temperature sensor operates automatically to select the desired operation mode with Cooling, Soft Dry or Heating.
- ■ The operation mode changes every hour, when necessary.

DRY-Soft Dry Operation.

- ■ Soft Dry is a very gentle Cooling Operation consisting primarily of dehumidifying. It does not lower the room temperature very much.

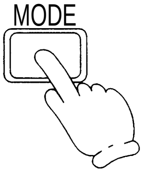


Cooling Operation until room temperature reaches the setting temperature

Super Low airflow amount

When room temperature reaches the setting temperature, operation will switch to Soft Dry.

1



Press to select operation mode.

- The display changes in the order

AUTO → HEAT → COOL → DRY

each time the button is pressed.

2

Press to start the operation.

- Operation indication lamp (RED) will light up.
- Press once more, to stop the operation.

3

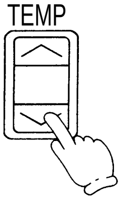
Press to select airflow volume.

- The display changes in the order.

AUTO FAN ➡ ▮ ➡ ▮▮▮ ➡ ▮▮▮▮▮

Automatic   Low   Medium   High

4

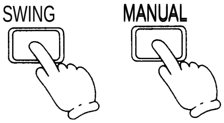


Press to select room temperature.

- Heating, Cooling, Soft Dry-Select temperature as desired. (16℃～30℃)
- Automatic.

🌡◀🌡 2℃ lower than standard   🌡 standard   🌡▶🌡 2℃ higher than standard

5



Press MANUAL continuously.

- The vertical airflow direction louver will move up and down. Release the button when the louver is at the desired position.

Press SWING

- Cooling & Soft Dry – The vertical airflow direction louver will swing up and down automatically.

  Heating – When the discharge air temperature is low such as at the start of heating operation, the cold air blows at horizontal level. As the temperature rises, the hot air blows in a downwards direction.

  To stop the automatic airflow direction operation, press SWING button.

HEAT – Heating Operation

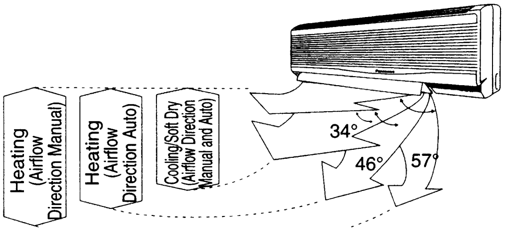
- **Defrosting Operation**
- Depend on the outdoor temperature, the operation occasionally stops to melt the frost on the outdoor unit.
- Heat is obtained from outdoor air to warm up the room. When the outdoor ambient air temperature falls, the heating capacity of the unit might be reduced.

  We recommend that you use an additional heating device when the outdoor ambient air temperature is low.

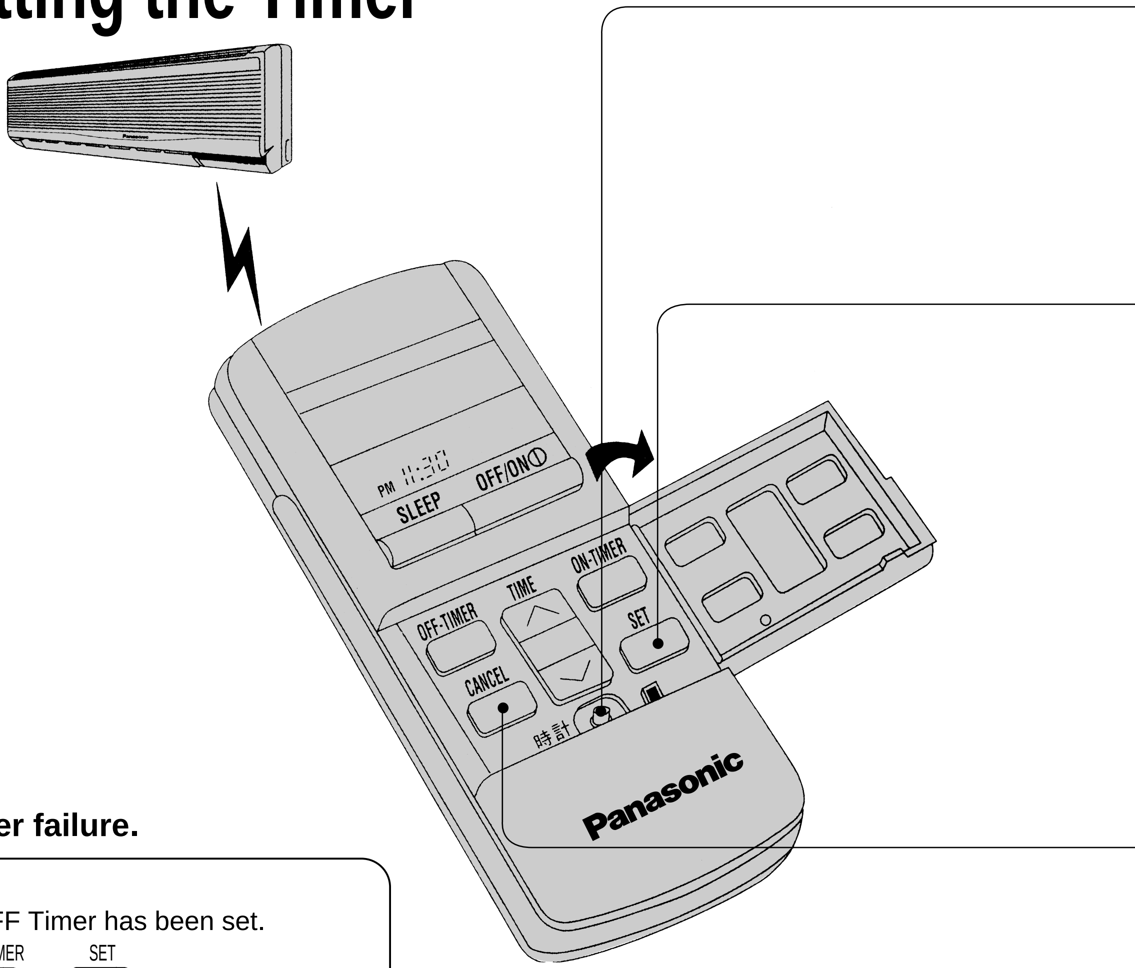
Automatic Airflow Volume

- The speed of the indoor fan is adjusted automatically according to the operation. The indoor fan stops occasionally during cooling operation.

Automatic Airflow Volume


Heating (Airflow Direction Manual)
Heating (Airflow Direction Auto)
Cooling/Soft Dry (Airflow Direction Manual and Auto)
34°
46°
57°

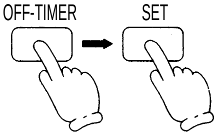
Setting the Timer


PM 11:30
SLEEP
OFF/ON
OFF-TIMER
TIME
ON-TIMER
SET
CANCEL
時計
Panasonic

If there is a power failure.

To reset the Timer.

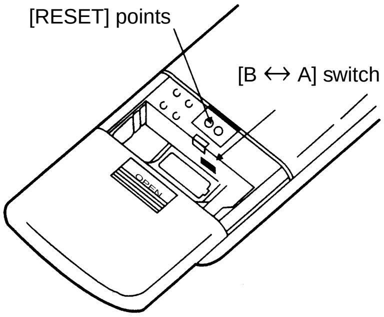
(Example) If the OFF Timer has been set.


OFF-TIMER
SET

- Even if there is a power failure, the setting time is still stored in the memory because the remote control is a battery operated type.

<Note>

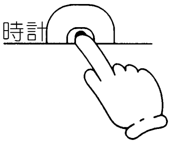
Regarding remote control.


[RESET] points
[B ↔ A] switch
OPEN

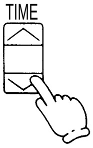
- If the current time is not set correctly, correct Timer setting will not be possible.
- When the Timer is set, the current time display will vanish.
- [RESET] points will clear the memory once they are shorted.
- [B↔A] switch is used when two air conditioners units have been installed in one room. Please consult your dealer.

To set the current time.

■

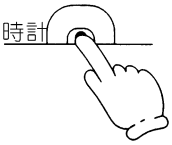


Set hours and minutes



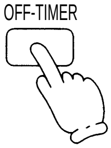
...to advance the time

...to reverse the time



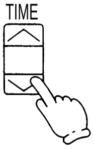
To set the Timer.

■ OFF Timer



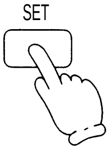
The “OFF-TIMER” will blink.

Set hours and minutes



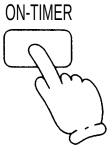
...to increase 10 minutes each step.

...to decrease 10 minutes each step.



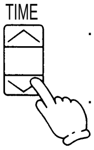
The Timer indication lamp at main unit will light up. LED colour: Orange.

■ ON Timer



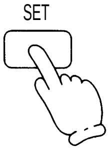
The “ON-TIMER” will blink.

Set hours and minutes



...to increase 10 minutes each step.

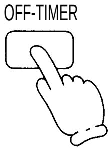
...to decrease 10 minutes each step.

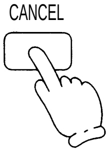


The Timer indication lamp at main unit will light up. LED colour: Orange.

To cancel the Timer.

■ OFF Timer

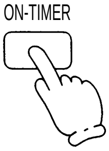




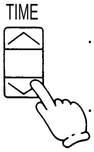
- ● The Timer indication lamp at main unit will go off.
- ● To cancel the ON Timer, follow the same procedure.

To change the Timer setting time.

■ (Example) To change the ON timer setting time.

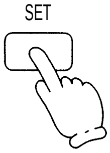


Change hours and minutes setting



...to increase 10 minutes each step.

...to decrease 10 minutes each step.



Timer

■ The ON Timer and OFF Timer can only be set once during a day.

■ The operation will start before the actual setting time with ON Timer setting.

Cooling and Soft Dry	: 15 minutes before
Heating and Automatic	: 30 minutes before

This is to allow time to attain your desired set temperature.

■ Setting the OFF Timer.

> This is useful for saving electricity costs incurred by forgetting to turn off the air conditioner.

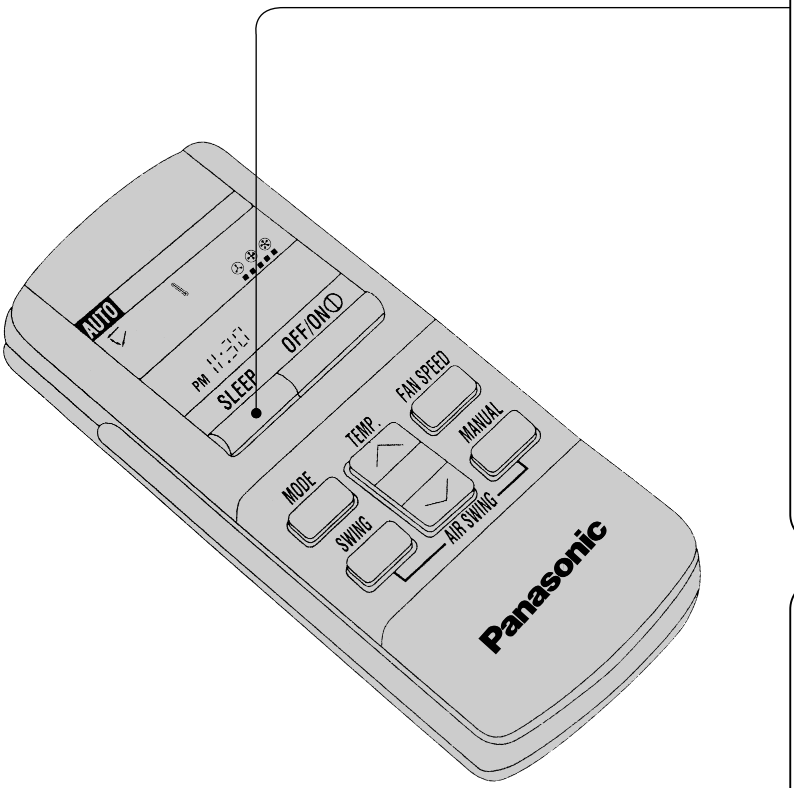
■ Setting the ON Timer.

> If the air conditioner is set before you go out, the room temperature will be close to your desired temperature when you return.

Convenient Operation

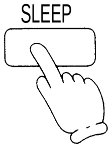
Sleep Mode

This is to gain a comfortable room temperature while sleeping.


AUTO
PM 11:30
SLEEP
OFF/ON
FAN SPEED
TEMP.
MANUAL
MODE
SWING
AIR SWING
Panasonic

To set Sleep Mode.

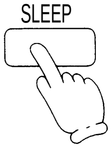
- Press



(The sleep indication lamp on the main unit will light up.)

To cancel Sleep Mode.

- Press once more



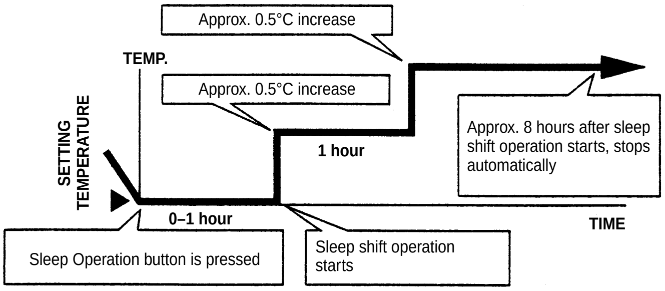
(The sleep indication lamp on the main unit will switch off.)

Sleep Mode Operation.

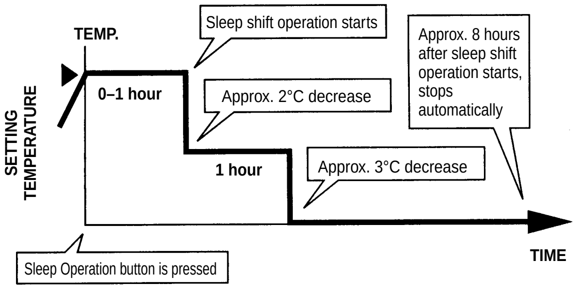
- when the room temperature reaches the setting temperature or after 1 hour of operation, sleep shift operation starts and the airflow volume will automatically change to low.
- Sleep Mode Operation time is 8 hours.
- When using together with the Timer, the Timer has priority.

<Information>

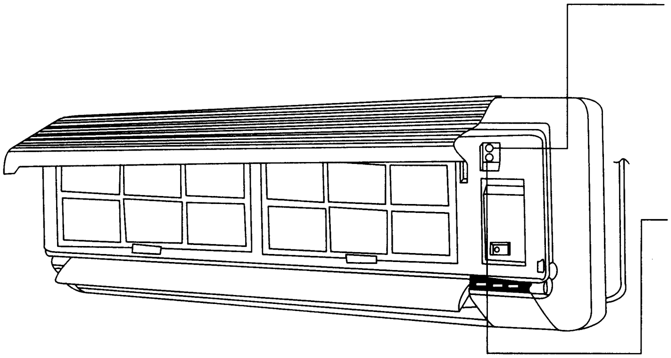
- Cooling or Soft Dry Operation for Sleep Mode movement will start to avoid overcooling.



- Heating Operation for Sleep Mode movement will start to avoid overheating.



When the remote control cannot be used



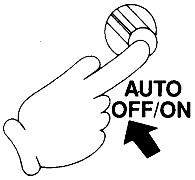
Test Run Button.

(Use when installing and moving)

Auto Operation Button.

- When the remote control cannot be used, press Auto Operation Button to run automatic Operation.
  (airflow direction setting will be automatic.)

- **Press Auto Operation Button.**
  (The operation indication lamp will blink for 20 seconds, and then light up)
  - If the button is pressed once more, the air conditioner will stop.
    (The operation indication lamp will switch off.)



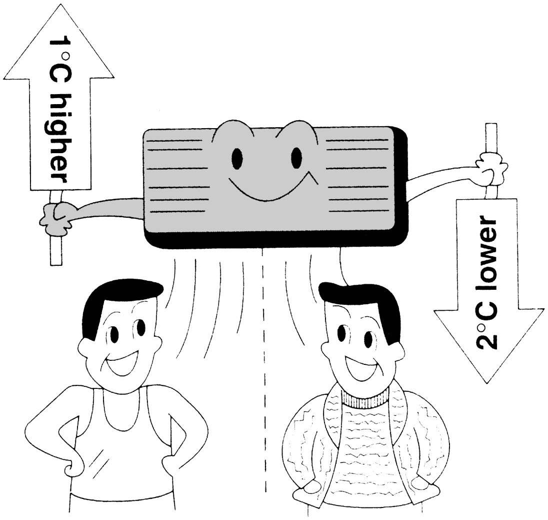
OFF/ON remote control signal receiving sound

- The Remote Control signal receiving sound can be omitted as desired.

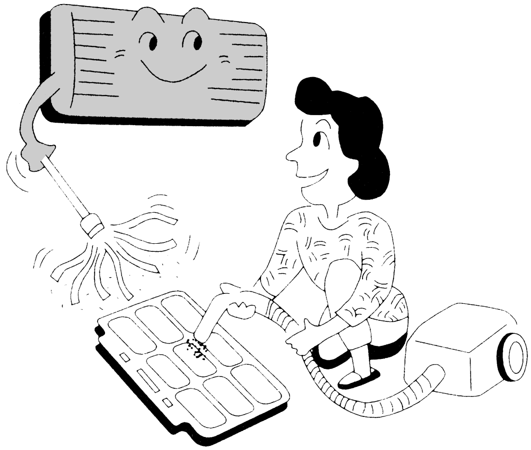
- To switch OFF the signal receiving sound, press Auto Operation Button for 10 seconds or more. At the same time, Automatic Operation starts.
  (To switch ON, press Auto Operation Button once more for 10 seconds or more.)

Operation Hints

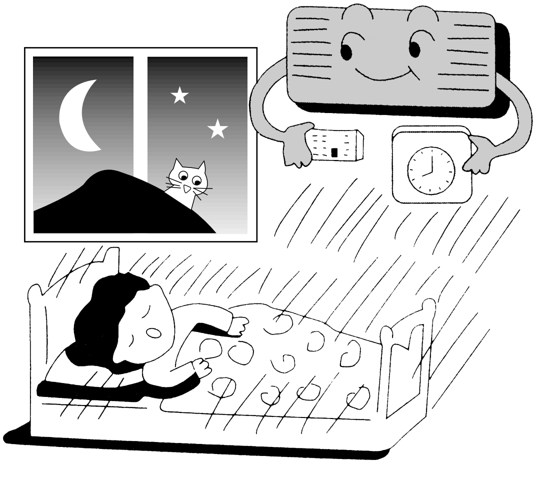
- Adjust room temperature properly. Set the temperature 1°C higher (Cooling Operation) or 2°C lower (Heating Operation) than actually desired. Approximately 10% of electricity costs can be saved.



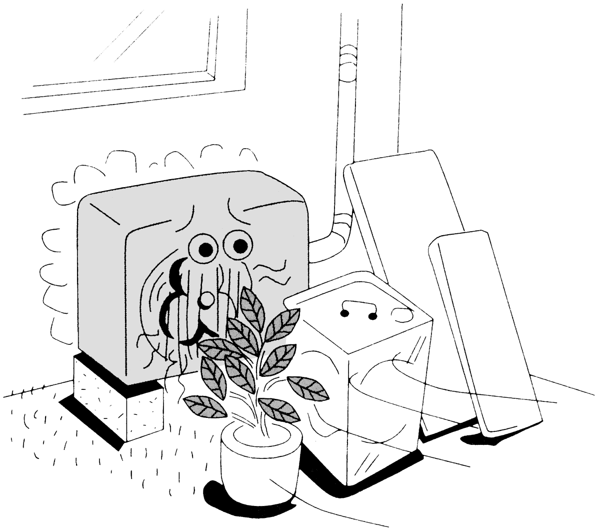
- Clean the air filter regularly. Blockage in the air filter reduces the airflow and lowers the cooling or heating. Clean at least once every 2 weeks. Otherwise, about 6% of electricity cost will be wasted.



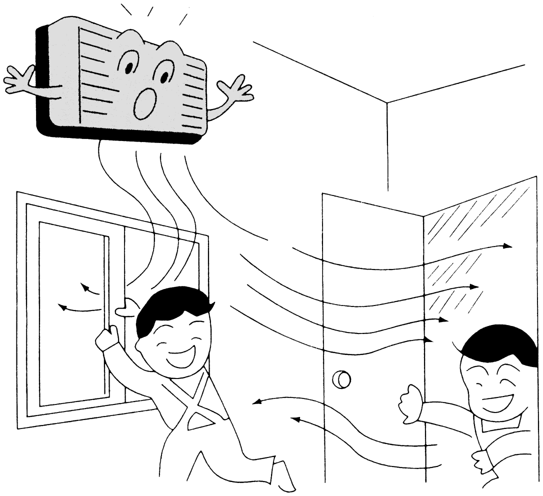
- Prevent wastage with the Timer. Use Timer when sleeping or going out to save electricity cost.



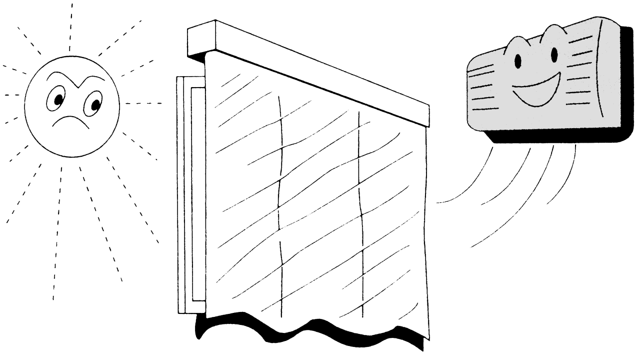
- Do not block the air outlet vents at outdoor unit. Otherwise, it will lower the cooling or heating performance.



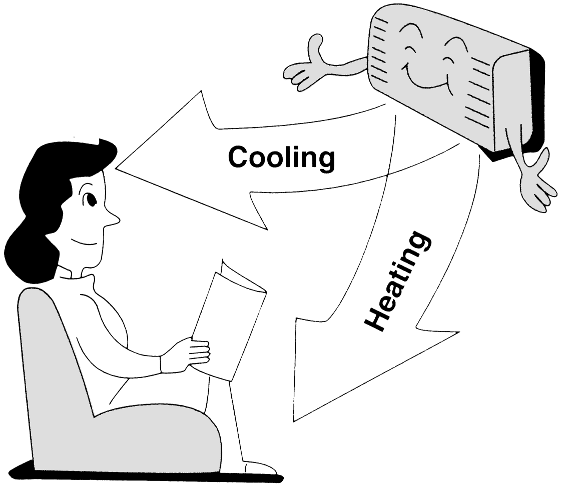
- Make sure that the doors and windows are shut. Otherwise, cooling and heating performance will be reduced and electricity cost is wasted.



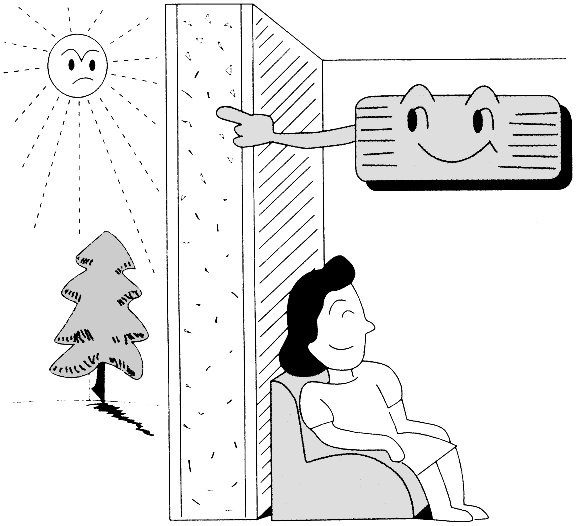
- Keep blinds or curtains closed. Do not let sunshine enter the room directly. About 5% of electricity cost can be saved.



- Proper airflow direction adjustment. Set the airflow direction louvers horizontal for Cooling Operation and downwards for Heating Operation. Operation result will be better.



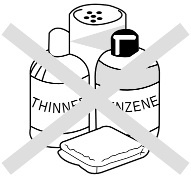
- Use insulating material for better performance. Use insulating material during construction or renovations. It will save electricity cost.



Better Care and Maintenance

Regular care and maintenance will extend the life of the air conditioner and prevent wastage of electricity. Before performing any maintenance procedure, be sure to switch off the main power supply.

Caution



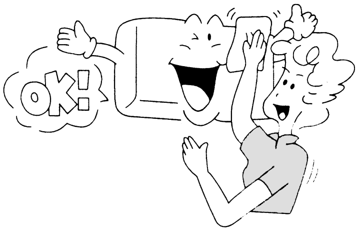
Do not use water or volatile liquids.

- Do not make air conditioner wet, as there is the danger that it could cause electric shocks.
  Be sure not to apply water when cleaning or at any other time.
- Using water above 40°C could cause deformation and/or discolouration.
- Volatile liquids such as thinner or benzene may damage the air conditioner.

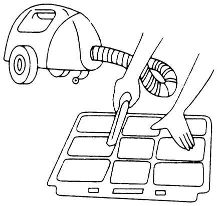
Cleaning the air conditioner and air filters

Once every 2 weeks is recommended.

- **Clean the air conditioner.**
  Wipe gently with a soft, dry cloth.



- **Clean the air filters.**

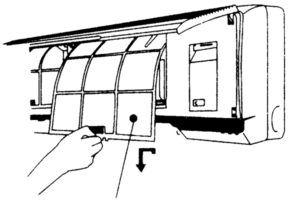


- To remove the dust adhering to the filters, either use a vacuum cleaner, or wash them in water and dry in the shade.
- Re-insert the filters correctly at the left and right, with the side marked [FRONT] facing forward.
- Purchase replacement filters from your air conditioner dealer if the air filters become damage.
  Air Filter No. C4209-180

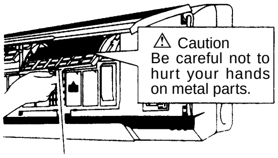
Replacement of air purifying filters

Recommended about once every 3 months.

1 **Remove the air filters.**



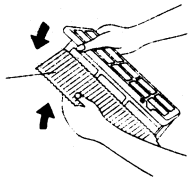
2 **Remove the air purifying filters.**



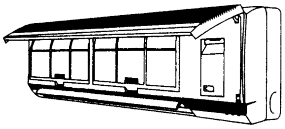
⚠ Caution
Be careful not to hurt your hands on metal parts.

purifying filter

3 **Remove the filters from the filter frame.**



<Note>

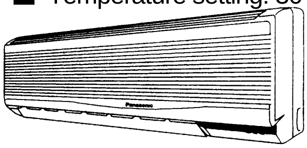


- The indoor unit within a three month period, replace the purifying filters.
- Re-insert the filters correctly at the left and right with the side marked [FRONT] facing forward.
- Dusty filters cannot be re-used, even if they are cleaned and washed.
- Purchase replacement filters from your air conditioner dealer.
- Part number for air purifying filters: **CZ-SFD30N**

When not using the air conditioner for a long period

1 **Operate the air conditioner for 2 to 3 hours.**

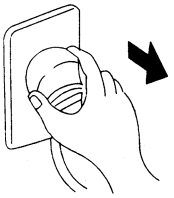
- Type of operation: Cooling.
- Temperature setting: 30°C



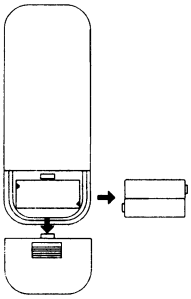
In order to dry out the internal mechanisms

2 **For air conditioners with a power plug, stop operation by remote control and pull out the power plug.**

Note: If the unit is not off by remote control, the unit will operate when you plug in (because of Auto-restart Control is provided).



3 **Remove the batteries from the remote control.**



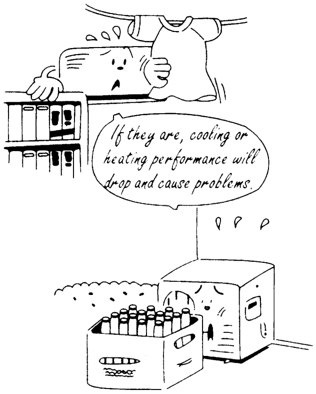
Pre-season inspection (The earlier the better)

- **Is the discharge air cold (warm)?**

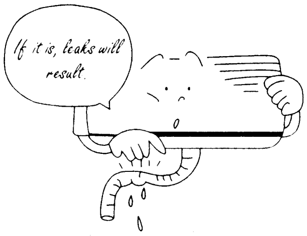
  Operation is normal if, 15 minutes after the start of operation, the temperature difference between the air intake and outlet vents is 8°C or above for cooling and 14°C or above for heating

Is cool (warm) air coming out?

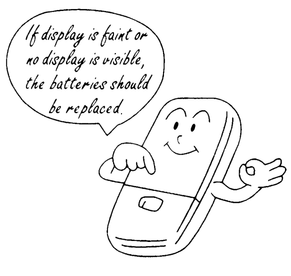
- **Are the air outlet vents and air intake vents obstructed?**


If they are, cooling or heating performance will drop and cause problems.

- **Is the drain hose cracked or crushed?**

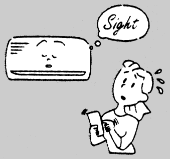
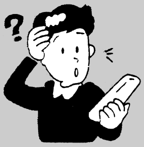
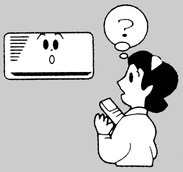
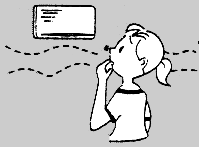
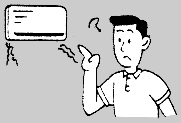
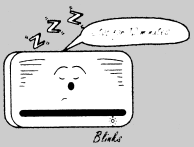
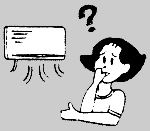

If it is, leaks will result.

- Are the remote control batteries in good condition?


If display is faint or no display is visible, the batteries should be replaced.

Troubleshooting

Normal operation

Q Is it okay?	**A** This is the answer.
 **Air conditioner has been restarted, but does not operate for 3 minutes.**	This is to protect the air conditioner. Wait until the air conditioner begins operating.
 **During Soft Dry Mode Operation, the air conditioner stops.**	Soft Dry Mode Operation is a very gentle Cooling Operation consisting primarily of dehumidifying. The air conditioner may stop for approximately 6 minutes in order to prevent overcooling. If the room temperature rises again, the operation will recommence.
 **Airflow does not begin immediately during Heating Operation.**	If the airflow begins before its temperature become warm, it will cause an undesired cooling effect. In order to prevent this, the airflow will not begin until it is sufficiently warm. (The operation lamp will blink until the airflow begins.)
 **The room has a peculiar odour.**	This may be a damp smell exuded by the walls, carpet, furniture or clothing in the room.
A sound like water flowing can be heard. A noise that sounds like the compressed air releasing into atmosphere	This is the sound of refrigerant flowing inside the air conditioner unit. This is the sound of reversing the freon flow inside the unit at the starting and finishing the defrosting during Heating operation.
 **It seems that fog is coming out from the air conditioner.**	Condensation occurs when the airflow from the air conditioner cools the room air.
 **Operation stops for about 12 minutes during heating. (The operation lamp blinks.)**	This is to melt the frost which has accumulated on the outdoor unit (Defrosting Operation). This will take no longer than about 12 minutes, so wait for operation. (Frost accumulates on the outdoor unit when the outdoor temperature is low and the humidity is high.) Water comes out from the outdoor unit.
 **During Automatic Airflow Volume setting, indoor fan stops occasionally.**	This is to remove the smell exuded by the surroundings.

Abnormal operation

The air conditioner does not operate.	■ Has the circuit breaker been tripped? ■ Has the power plug been removed from the wall outlet? ■ Is the Timer being used correctly? ■ Has the **REMOTE CONTROLLER B ↔ A** switch been set to “B”
The air conditioner does not cool effectively.	■ Has the temperature been set incorrectly? ■ Are the filters dirty? ■ Are the intake or outlet vents of the outdoor unit obstructed? ■ Are all windows and doors closed?
Air conditioner operation noise too loud.	■ Is the installation work slanted? ■ Is the front grille closed properly?

Call the dealer immediately

If the following conditions occur, immediatel pull out the power plug or turn off the power breaker

- **Abnormal noise is heard during operation.**
- **Switches or buttons do not operate properly.**
- **Water or foreign material gets into the remote control by mistake.**
- **The circuit breaker switches off frequently.**
- **Water leaks from the indoor unit.**
- **Power supply cord and plug become unusually warm.**

WARNING

(1) REMOVE POWER PLUG OR DISCONNECT FROM THE MAINS BEFORE SERVICING THIS APPLIANCE.

(2) THIS APPLIANCE MUST BE EARTHED.

(3) THE APPLIANCE IS NOT INTENDED FOR USE BY YOUNG CHILDREN OR INFIRM PERSONS WITHOUT SUPERVISION.

(4) YOUNG CHILDREN SHOULD BE SUPPERVISED TO ENSURE THAT THEY DO NOT PLAY WITH THE APPLIANCE.

IMPORTANT

1. WHEN THE POWER CORD IS CONNECTED TO THE MAINS THROUGH A MULTIPOLAR SWITCH

THERE MUST BE A MULTI POLAR SWITCH (DISCONNECTING MEANS) WITH A MINIMUM 3 mm CONTACT GAP IN THE FIXED INSTALLATION CIRCUIT.

2. WHEN THE POWER PLUG IS CONNECTED TO THE RECEPTACLE

The wires in this main lead are coloured in accordance with the following code:

Green-and-yellow : Earth
Blue : Neutral
Brown : Live

If the colours of the wires in the main lead of this appliance do not correspond with the coloured markings indentifying the terminals in your plug, proceed as follows:
The green-and-yellow wire must be connected to the terminal in the plug which is marked with letter E or by the earth symbol ⏚ or coloured green or green-and-yellow.
The blue wire must be connected to the terminal which is marked with the letter N or coloured black.
The brown wire must be connected to the terminal which is marked with the letter L or coloured red.

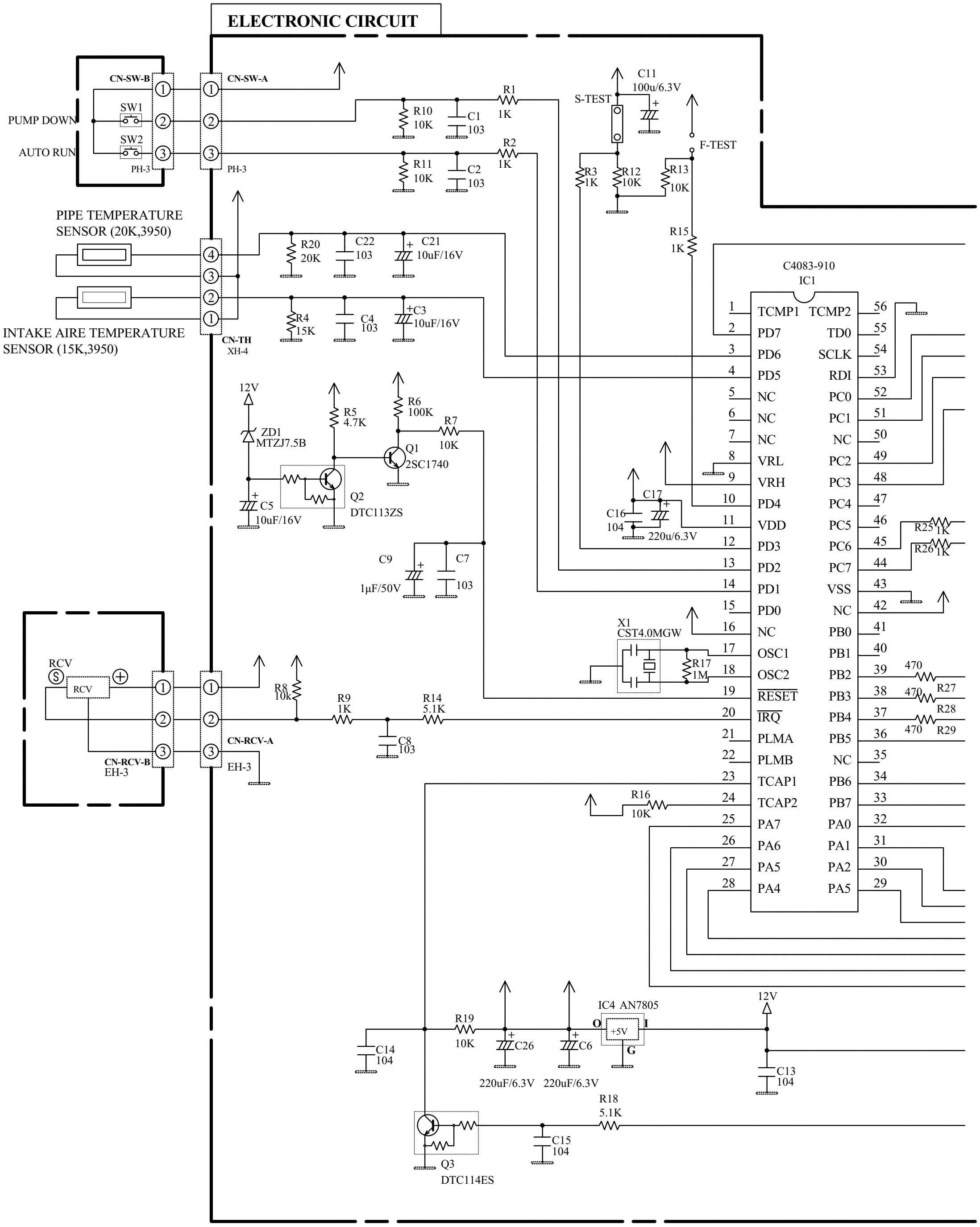
Fuse Specifications	In door	Out door
	T 3.15(A), L250(V)	T3.15(A), L250(V)

NOTE

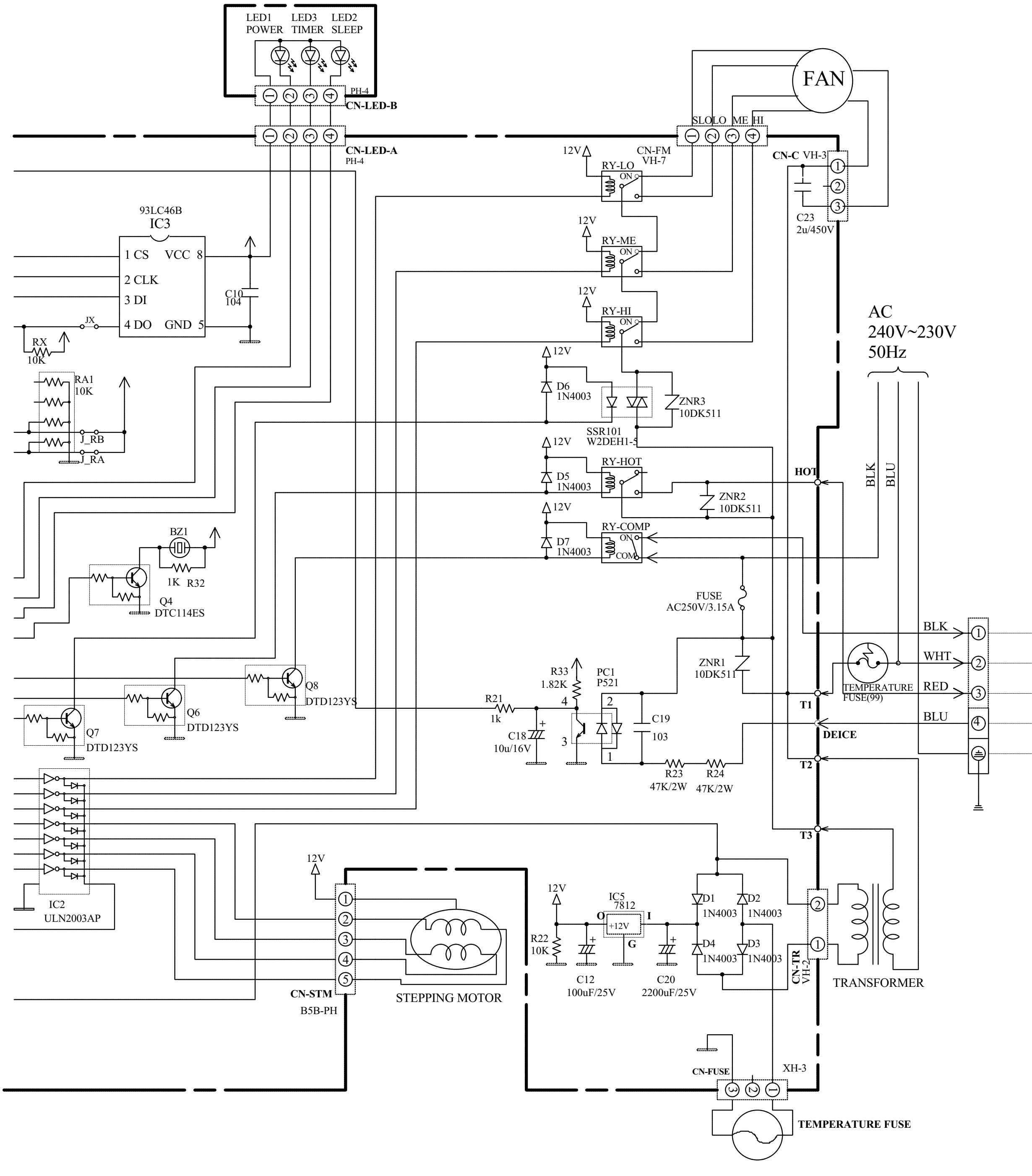
IF THE SUPPLY CORD IS DAMAGED, IT MUST BE REPLACED BY A SPECIAL CORD OR ASSEMBLY AVAILABLE FROM THE MANUFACTURER OR IT’S SERVICE AGENT.

• CS-A281KR.CU-A281KR

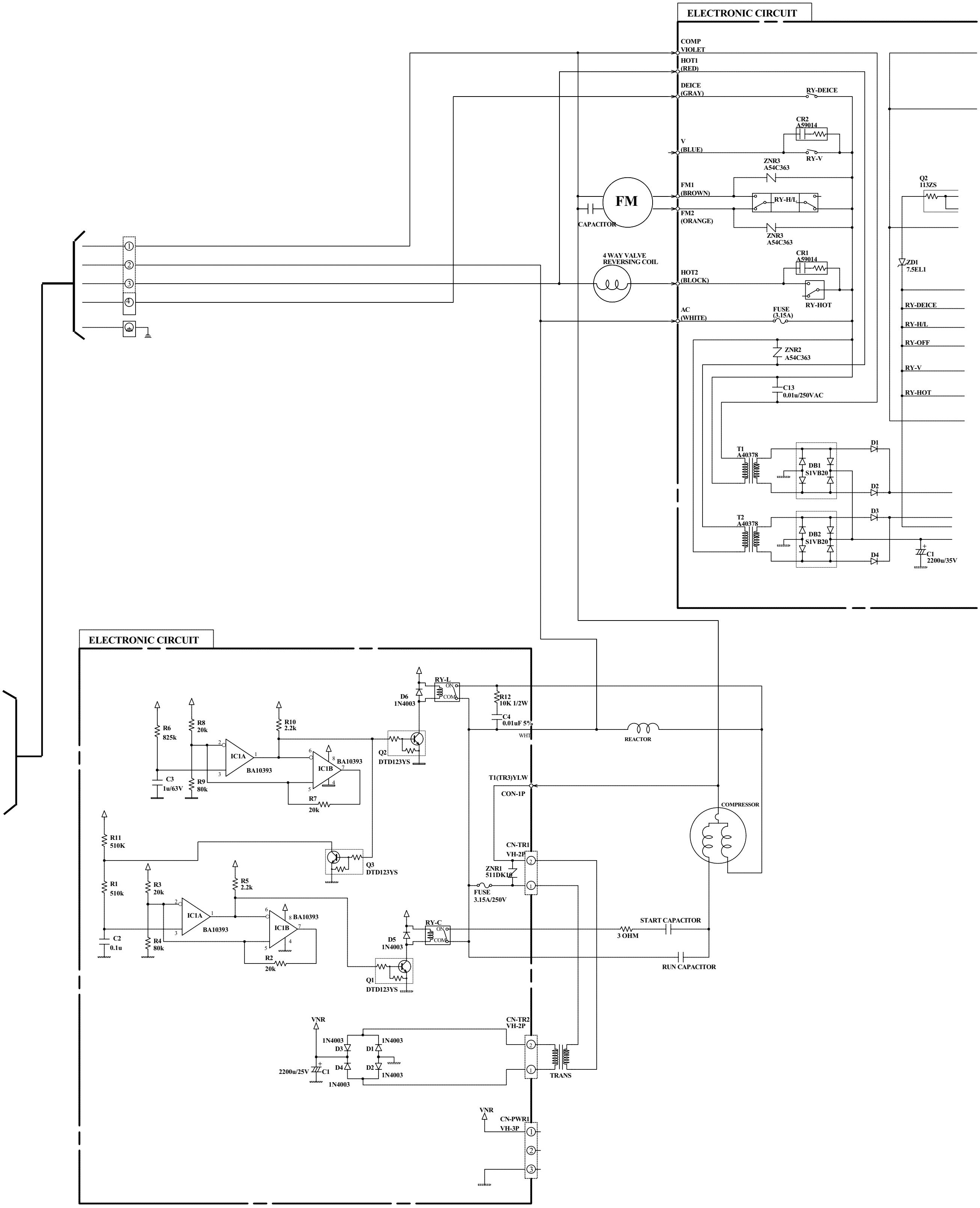
SCHEMATIC DIAGRAM 1/4


ELECTRONIC CIRCUIT
CN-SW-B
CN-SW-A
PUMP DOWN
AUTO RUN
SW1
SW2
PH-3
PH-3
R10 10K
C1 103
R1 1K
R11 10K
C2 103
R2 1K
S-TEST
C11 100u/6.3V
F-TEST
R3 1K
R12 10K
R13 10K
R15 1K
PIPE TEMPERATURE SENSOR (20K,3950)
INTAKE AIRE TEMPERATURE SENSOR (15K,3950)
CN-TH
XH-4
R20 20K
C22 103
C21 10uF/16V
R4 15K
C4 103
C3 10uF/16V
C4083-910
IC1
1 TCMP1
2 PD7
3 PD6
4 PD5
5 NC
6 NC
7 NC
8 VRL
9 VRH
10 PD4
11 VDD
12 PD3
13 PD2
14 PD1
15 PD0
16 NC
17 OSC1
18 OSC2
19 RESET
20 IRQ
21 PLMA
22 PLMB
23 TCAP1
24 TCAP2
25 PA7
26 PA6
27 PA5
28 PA4
56 TCMP2
55 TD0
54 SCLK
53 RDI
52 PC0
51 PC1
50 NC
49 PC2
48 PC3
47 PC4
46 PC5
45 PC6
44 PC7
43 VSS
42 NC
41 PB0
40 PB1
39 PB2
38 PB3
37 PB4
36 PB5
35 NC
34 PB6
33 PB7
32 PA0
31 PA1
30 PA2
29 PA5
R25 1K
R26 1K
470
470 R27
R28
470 R29
12V
ZD1 MTZJ7.5B
C5 10uF/16V
R5 4.7K
Q2 DTC113ZS
R6 100K
Q1 2SC1740
R7 10K
C9 1μF/50V
C7 103
C17
C16 104
220u/6.3V
X1 CST4.0MGW
R17 1M
RCV
RCV
CN-RCV-B
EH-3
CN-RCV-A
EH-3
R8 10k
R9 1K
R14 5.1K
C8 103
R16 10K
C14 104
R19 10K
C26 220uF/6.3V
C6 220uF/6.3V
IC4 AN7805
O I G
+5V
12V
C13 104
R18 5.1K
C15 104
Q3 DTC114ES

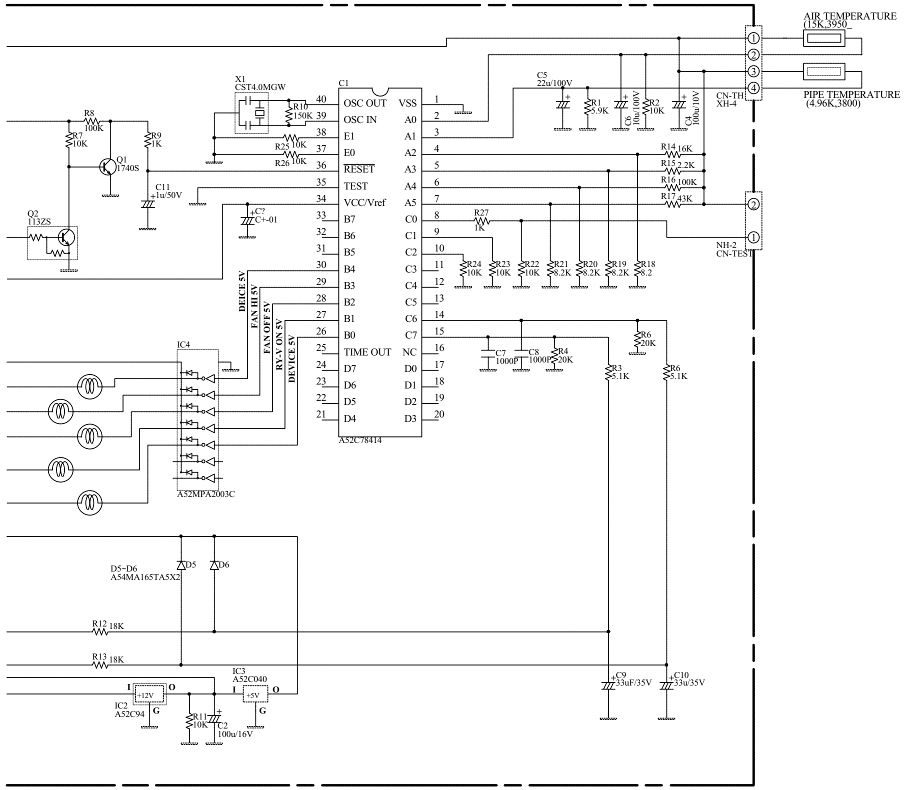
SCHEMATIC DIAGRAM 2/4


LED1
POWER
LED3
TIMER
LED2
SLEEP
① ② ③ ④
PH-4
CN-LED-B
① ② ③ ④
CN-LED-A
PH-4
93LC46B
IC3
1 CS
VCC 8
2 CLK
3 DI
4 DO
GND 5
C10
104
JX
RX
10K
RA1
10K
J_RB
J_RA
BZ1
1K R32
Q4
DTC114ES
Q8
DTD123YS
Q6
DTD123YS
Q7
DTD123YS
IC2
ULN2003AP
FAN
SLO LO ME HI
① ② ③ ④
12V
CN-FM
VH-7
RY-LO
ON
RY-ME
ON
RY-HI
ON
CN-C VH-3
① ② ③
C23
2u/450V
D6
1N4003
ZNR3
10DK511
SSR101
W2DEH1-5
D5
1N4003
RY-HOT
ZNR2
10DK511
D7
1N4003
RY-COMP
ON
COM
FUSE
AC250V/3.15A
AC
240V~230V
50Hz
BLK
BLU
HOT
R33
1.82K
PC1
P521
ZNR1
10DK511
R21
1k
C18
10u/16V
C19
103
R23
47K/2W
R24
47K/2W
T1
DEICE
T2
T3
BLK
WHT
RED
BLU
① ② ③ ④
TEMPERATURE
FUSE(99)
12V
① ② ③ ④ ⑤
CN-STM
B5B-PH
STEPPING MOTOR
12V
IC5
7812
O
I
G
+12V
R22
10K
C12
100uF/25V
C20
2200uF/25V
D1
1N4003
D2
1N4003
D4
1N4003
D3
1N4003
② ①
CN-TR
VH-2
TRANSFORMER
CN-FUSE
XH-3
③ ② ①
TEMPERATURE FUSE

SCHEMATIC DIAGRAM 3/4


ELECTRONIC CIRCUIT
COMP VIOLET
HOT1 (RED)
DEICE (GRAY)
RY-DEICE
CR2 A59014
V (BLUE)
RY-V
ZNR3 A54C363
FM
FM1 (BROWN)
FM2 (ORANGE)
RY-H/L
CAPACITOR
ZNR3 A54C363
Q2 113ZS
4 WAY VALVE REVERSING COIL
CR1 A59014
HOT2 (BLOCK)
RY-HOT
ZD1 7.5EL1
AC (WHITE)
FUSE (3.15A)
RY-DEICE
RY-H/L
RY-OFF
ZNR2 A54C363
RY-V
C13 0.01u/250VAC
RY-HOT
T1 A40378
DB1 S1VB20
D1
D2
T2 A40378
DB2 S1VB20
D3
D4
C1 2200u/35V
①
②
③
④
ELECTRONIC CIRCUIT
RY-L
ON
COM
D6 1N4003
R12 10K 1/2W
C4 0.01uF 5%
WHT
REACTOR
R6 825k
R8 20k
R10 2.2k
IC1A
BA10393
IC1B
BA10393
Q2 DTD123YS
C3 1u/63V
R9 80k
R7 20k
T1(TR3)YLW
CON-1P
COMPRESSOR
R11 510K
Q3 DTD123YS
CN-TR1 VH-2P
ZNR1 511DK10
R1 510k
R3 20k
R5 2.2k
FUSE 3.15A/250V
IC1A
BA10393
IC1B
BA10393
RY-C
ON
COM
START CAPACITOR
3 OHM
C2 0.1u
R4 80k
R2 20k
D5 1N4003
RUN CAPACITOR
Q1 DTD123YS
VNR
CN-TR2 VH-2P
1N4003 D3
D1 1N4003
2200u/25V C1
D4 1N4003
D2 1N4003
TRANS
VNR
CN-PWR1 VH-3P

SCHEMATIC DIAGRAM 4/4


AIR TEMPERATURE
(15K,3950_
PIPE TEMPERATURE
(4.96K,3800)
CN-TH
XH-4
NH-2
CN-TEST
X1
CST4.0MGW
C1
OSC OUT
OSC IN
E1
E0
RESET
TEST
VCC/Vref
B7
B6
B5
B4
B3
B2
B1
B0
TIME OUT
D7
D6
D5
D4
VSS
A0
A1
A2
A3
A4
A5
C0
C1
C2
C3
C4
C5
C6
C7
NC
D0
D1
D2
D3
A52C78414
R8
100K
R7
10K
R9
1K
Q1
1740S
C11
1u/50V
Q2
113ZS
R10
150K
R25 10K
R26 10K
C?
C+-01
C5
22u/100V
R1
5.9K
C6
10u/100V
R2
10K
C4
100u/10V
R14 16K
R15 2.2K
R16 100K
R17 43K
R27
1K
R24
10K
R23
10K
R22
10K
R21
8.2K
R20
8.2K
R19
8.2K
R18
8.2
R6
20K
C7
1000P
C8
1000P
R4
20K
R3
5.1K
R6
5.1K
DEICE 5V
FAN HI 5V
FAN OFF 5V
RY-V ON 5V
DEVICE 5V
IC4
A52MPA2003C
D5
D6
D5~D6
A54MA165TA5X2
R12 18K
R13 18K
IC2
A52C94
+12V
I
O
G
R11
10K
C2
100u/16V
IC3
A52C040
+5V
C9
33uF/35V
C10
33u/35V